PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 114, No. 18 Thursday, April 30, 1942 Price Ten Cents

WPB Explains Its Paper and Pulp Policies

Statement Sent To All Members of Paper and Pulp Industry Defines Purposes and Objectives — Determination of Essentiality, Mandatory Regulations and Other Important Points Are Covered.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 25, 1942—The Pulp and Paper Branch of the War Production Board has sent the following statement of its policies to all members of the pulp and paper industry:

The present objectives of the Branch are:

(a) To arrange for the production of the pulp, paper and paper products which are necessary for direct war use and for essential civilian requirements, and to have such production available in adequate quantities where and when it may be needed.

(b) To assist the industry in converting capacity now engaged in producing non-essential products to the manufacture of products required for war and essential civilian uses.

(c) To assist the industry in arranging for the utilization of its tools and equipment in the production of products other than paper which are needed for war uses.

(d) To restrict the industry's use of critical materials:

(1.) By encouraging the substitution of less essential materials.

(2.) By curtailing repair and maintenance materials requiring critical metals, rubber and other substances to the basic necessities of manufacture for war and essential civilian uses.

For the attainment of these objectives the following policies shall govern the operation and activities of this Branch:

Determination of Product Essentiality (1)

As rapidly as possible, and in cooperation with other interested Government agencies and with the industry, the Branch will determine the relative essentiality of pulp for paper products. It will keep such determination in step with the changing requirements of the war needs.

Mandatory Regulations (2)

The Branch will institute and administer such mandatory regulation of the industry's operations as may be necessary for the accomplishment of the objectives listed above. It will not depend upon voluntary industry section.

Cooperation in Compliance (3)

The Branch will cooperate with the Compliance Branch and other agencies of the War Production Board in obtaining compliance with all orders.

Confidential Data (4)

The Branch will hold in confidence all statistical data and related information reported to it, except as use of such material by other Government agencies or properly constituted committees from the industry may be authorized by the Branch Chief as necessary in the public interest. Similar confidential integrity will be expected from all industry committee members.

Use of Questionnaire (5)

It will be the policy of the Branch to restrict the use of questionnaires to the industry to necessities, and to avoid over-lapping or duplication of requests for statistical data and related information.

Cooperation with Industry (6)

It shall be the policy of the Branch to seek recommendations from the industry through properly organized committees and groups in respect to the formulation of regulatory measures affecting the industry. It will endeavor to keep the industry informed regarding the character and extent of such regulation of its activities as may be necessary. To that end the Branch will, from time to time, issue general releases covering its activities. It will also make available to the industry such basic data as may be released without detriment to the public interest.

Consistent and Uniform Interpretations (7)

In order to maintain the highest possible uniformity and consistency in advice and instructions emanating from any Section or Division of the Branch and to make sure that all activities of the Branch are handled in conformity with existing regulations, the Branch will encourage members of the industry seek-

(Continued on page 12)

Newsprint Mill Capacity Held Adequate

Head of Canadian Newsprint Association Foresees No Curtailment For U. S. Publishers Within Next Six or Eight Months—Brompton Co. To Produce Sulphate Pulp In Former Lake Sulphite Mill.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 27, 1942—Charles Vining, president of the Canadian Newsprint Association of Canada has given out the following statement: "There have recently been queries as to newsprint supply and it is apparent that misconception has resulted from reports of probable hydro-power diversion from newsprint mills to other uses. We have made careful estimates of newsprint supply and consumption for the balance of 1942.

"Our conclusion is that, after allowing for curtailment of power now in prospect, there will be mill capacity to meet the regular requirements of the Canadian industry's contract customers in the United States and Canada throughout 1942.

"Our estimates taken into account the inventories now held by consumers and the shrinkage of deliveries to overseas markets.

"It is clear that if power diversion eventually does develop to a point of creating a possible newsprint shortage, such a contingency will not arise within the next six or eight months and will not occur suddenly."

Orders Conservation of Paper Supplies

With a view to conserving supplies of paper and holding costs down the Ottawa authorities have issued three orders: (1) specifying the stock, styles and sizes hereafter to be used exclusively; (2) setting restrictions as to weight, size, color and finish of certain bond, ledger, book, lithographing and offset papers; (3) limiting the quantity of paper which may be used in manufacture of solid fibre board and double-face and double-wall corrugated fibre board cartons.

Under the first order, students' scribblers and exercise books will have margins cut to one inch. Special imprints on the covers, other than brand names, will disappear, and covers in one color will be the rule. The cover stock for standard scribblers is to be tag manila or brown kraft. No exercise or work book is to contain less than 36 pages.

Loose-leaf refills are restricted as to sizes and ruling special imprints on packages, bands or labels are prohibited, and no new designs for scribblers, exercise books and practice books are to be made.

Newsprint is to be used for scribble work books, and grade white wove for exercise and practice books.

Sizes of Writing Pads Restricted

Writing pads and tablets are restricted to certain sizes and the minimum number of sheets is specified. There are to be no new designs or special imprints on any stock cover. Manufacture of tinted paper napkins is prohibited, and the 9½ by 10-inch size of plain napkins is eliminated. Boxed napkins are to be white only, single boxed and in 70's, and plain and dispenser napkins are limited to two sizes each. Tray covers must be 12 by 18 inches or 15 by 20.

No more senior size single-fold or double-fold paper towels are to be made, and manufacturers of junior size single-fold paper towels are limited to one of two specified sizes.

Sizes and weights of toilet rolls and toilet paper are specified. Manufacture of four-ounce and five-ounce rolls is to be discontinued, and no new designs or two-color labels are to be produced.

To Produce Kraft Pulp in Lake Sulphite Mill

The Brompton Pulp and Paper Company, it is stated here, are awarding contracts for the completion of equipment to produce kraft pulp in the mills of the Lake Sulphite Pulp Company recently taken over by Brompton, and efforts are being made to secure the equipment so that production to meet the shortage may take place at the earliest possible date. The mill, which was completed and partly equipped prior to the war, but have never come into operation, were designed for the production of 540,000 lbs. of chemical pulp per 24 hours. It is stated that the supply of pulpwood will not only come from limits in the vicinity but also from contractors and settlers who have been doing a good deal of export of pulpwood to the United States during the past few years.

WPB Issues New Chlorine Order

WASHINGTON, D. C., April 23, 1942—A change in the method of computing the permissible use of chlorine in the treatment of rag stock under General Limitation Order No. L-11 was ordered by the War Production Board, April 20, 1942, to take effect immediately.

Order L-11 limited the use of chlorine in the treatment of rag stock according to the total amount consumed during a base period. Amendment No. 1, effective April 20, changes the basis of limitation to the amount used per ton of rag stock treated.

The effect of this change is to afford relief to some paper mills which were already conserving chlorine during the base period by using a minimum amount per ton, and whose production has been unduly restricted under the method of computation set up in the original order.

990.1 General Limitation Order L-11-(c) (1). No producer shall use in any calendar quarterly period for the treatment of rag stock an average amount of chlorine per ton of rag stock treated greater than 80% of the average amount of chlorine per ton of rag stock treated used by such producer for the treatment of rag stock during the calendar quarterly period ending July 31, 1941.

Vancouver Paper Box Co. Formed

Vancouver Paper Box Company 1942 Ltd. was recently incorporated at Victoria, B. C., with 1000 shares without nominal or par value. The firm will engage in business as dealers in cardboard, boxes and other paper preparations and has its registered offices at 509, Bank of Nova Scotia Building, 602 West Hastings street, Vancouver, B. C.

Northwest Superintendents Plan Meeting

Spring Convention Convenes May 8-9 At Wisconsin Rapids—Over 300 Members and Their Wives Expected To Attend—Large Tree Plantings Scheduled To Be Made This Season—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 27, 1942—Between 300 and 400 members and their wives are expected at Wisconsin Rapids, Wis., May 8 and 9, for the spring convention of the Northwest division of the American Paper and Pulp Mill Superintendents Association.

Registration will take place at the Elks club Friday morning, May 8, and the first gathering will be a luncheon at Hotel Witter. Business sessions will be held Friday afternoon and Saturday morning, taking up problems of maintenance and conservation of materials, and those of procurement and priority. The slogan for the convention is "Don't Let the Axis Catch Us With Our Pants Down."

Wives of the delegates will hold a luncheon Friday noon at Bull's-Eye Country Club, followed by golf and bridge. In the evening they will have a dinner at the Paper Inn, plus bridge and bowling, while their husbands enjoy a stag dinner and entertainment at Hotel Witter. The convention will close with a banquet and dance Saturday evening at Memorial armory.

Various Committees Are Formed

Executives of the Consolidated Water Power and Paper Company and the Nekoosa-Edwards Paper Company are serving on the arrangements committees. Henry P. Baldwin, vice-chairman of the association, is chairman of the convention committee, with C. H. Reese as vice-chairman, and Thomas C. Dutcher, convention secretary and treasurer.

Other committeemen are: Howard B. Richmond, program; A. J. Hayes, housing; Mrs. C. H. Reese, ladies' entertainment; Robert J. Knowles, golf; William F. Thiele, skeet shoot, and T. A. Pascoe, Earl F. Otto and Lee Turley.

Walter Johnson, Green Bay, will preside at the sessions as association chairman. J. B. Roskams, Green Bay, is secretary-treasurer.

Tree Plantings Will Be Large This Year

Tree plantings in county forests, school forests, and on farms will total 7,750,000 seedlings this spring, according to F. B. Trenk, state extension forester at the University of Wisconsin. These will be in addition to the plantings carried on by the Wisconsin Conservation Commission in state-owned forests. Some of the plantings will be for shelter belts.

Kimberly-Clark Workers Start Fund

The Kimberly Mill Workers Union, composed of employees of the Kimberly-Clark Corporation's mill at Kimberly, Wis., have started a fund which will be used to buy supplies for workers who are serving in the armed forces. Each member will pay ten cents per month dues to provide the fund.

Badger Employees to Hold Safety Dinner

Employees of Badger Paper Mills, Inc., Peshtigo, Wis., will hold their semi-annual safety dinner and dance at the high school gymnasium Saturday evening, May 9, E. A. Meyer, president, will give a short address, and Walter Adrian will be toastmaster. A 40-minute floor show will be presented. This event is a reward to the employees for maintaining a splendid mill safety record.

Clem Coenen Goes To Paper Institute

Clem H. Coenen of De Pere, Wis., will join the staff of the Institute of Paper Chemistry, Appleton, Wis., May 15, to assist two other chemists engaged in research to find a practical means of disposing of waste sulphite liquor. The project is financed by 17 Wisconsin pulp mills endeavoring to solve the problem of pollution of the Fox and Wisconsin Rivers. Mr. Coenen was superintendent of the sewage treatment plant at De Pere, and has resigned.

Nuptials in the Paper Industry

Dr. S. Robinson Parsons, a member of the technical staff of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., and Miss Sara Jane Heger, Wisconsin Rapids, were married at the First Congregational Church at Appleton, Wis., April 18, by Dr. John Wilson. Dr. Parsons received his Ph.D. degree from the Institute of Paper Chemistry at Appleton in 1941 and has been with Consolidated since last summer. He has been commissioned a lieutenant in the Reserve Corps of the U. S. Army, and has been ordered to report for duty at the Edgewood Arsenal, Maryland, where the couple will reside.

Lloyd A. Toonen, cost accountant for the Falls Paper and Power Company, Oconto Falls, Wis., and Miss Eleanor Pagel, Green Bay, Wis., were married April 18 at the Kunesh Lutheran church. After a honeymoon trip to Chicago, Mr. and Mrs. Toolen took up residence at 412 S. Michigan street, De Pere, Wis.

"You Must Save Rubber"

To further assist manufacturers and other users of industrial rubber products in the vital campaign to conserve every ounce of the precious material, The B. F. Goodrich Company, Akron, Ohio, has just issued through its Industrial Products Distributors an 11 by 17½ inch wall poster complete with metal eyelet for easy hanging.

The material is treated in poster style, with a title "You Must Save Rubber," with condensed, simple rules for conservation. There are eight sub-headings —exposure of rubber to sunlight, to oil, gasoline and grease, abrasion and frictional wear, heavy overloads, excessive heat or cold, constant bending and flexing, capacity to stretch, and deterioration by water stretching—covered in easily understandable language.

News of the Philadelphia Paper Industry

War Production Board Appoints Paper Box Officials To Setup Box Advisory Committee—Paper and Cordage Men Hold Shad Dinner —Large Shipment of Paper For Sugar Rationing Books Received.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 27, 1942—Two Philadelphia paper box industry officials are among four Pennsylvanians on a New War Production Board Setup Box Industry Advisory committee, according to an announcement made this week. The Pennsylvania representatives are Charles A. Allan, Sprowles & Allan, Philadelphia; Walter F. Miller, Jr., Walter F. Miller Co., Inc., Philadelphia; G. R. Kreider, Jr., Lebanon Paper Box Company, Lebanon, and W. J. McClintock, Jr., McClintock Corp., Harrisburg.

Paper and Cordage Men Hold Dinner

On Friday evening last, the Philadelphia Paper and Cordage Association held its annual shad dinner at Hotel Philadelphian, with E. K. Lay, a former president of the Association, and chairman of the entertainment committee, in charge. This annual shad dinner is one of the highlights of the Association's activities, and is devoted to entertainment and recreation. With representatives from all the paper houses and most of the mills in this area, there was a record attendance. Mr. Lay, who can always be counted on to furnish a program of entertainment that is both ultra and versatile, was the recipient of compliments on all sides.

During the dinner, president Harry Smith of Thos. W. Price Co. announced that the United States Envelope Company, represented by Frank Sellers, Jr., and the David Weber Company, manufacturers of corrugated board, with Thomas McArdle as their representative, were admitted to membership in the Association. The membership is closely approaching the limit of 125, a goal which was set a short time back.

Association's Team Wins at Bowling

Tenpins or paper products for war production, it makes no difference to the members of the Philadelphia Paper and Cordage Association's Bowling Team, who kept the pins flying at Quaker City Alleys to win the championship of the Philadelphia Paper Trade Bowling League. On Thursday evening last, the J. R. Howarth Paper Company players who won the first half championship met with the Paper and Cordage Association's players, winners of the second half championship, for the play half match, with the result that the Association's team were the victors, and were presented with a very handsome trophy. The lineup of the Association's players was J. Woods, F. McGonigal, R. Melchinore, Whiting Patterson Company; W. Peterson, E. J. Spangler Company; J. Shafer, Hooper Paper and Twine Company, and Howard Satterthwaite, Schuylkill Paper Company.

Paper For Sugar Rationing Books Arrives

Into a freight car at 5th and Willow streets this past week, workment trundled 3,000-pound crates of gummed paper, notable because it will have a role in determining how much sugar is to go in your coffee and tea. It is the first shipment on a $40,000 order for 165 tons of paper to be made into sugar rationing books for storekeepers. The Government's orders total 918 tons. The paper is bound for one of the printing establishments who will turn out the books for storekeepers. Coupons issued to customers are to be ungummed paper. The storekeepers will paste the coupons in the books, which when filled, will make the dealers eligible to replenish their stocks for the amount of sugar sold.

Serious Shortage of Loggers

British Columbia's logging and pulp and paper industry are confronted with the most serious shortage of loggers experienced since the last war, and a survey of the industry just completed reveals the fact that the shortage is very definitely interfering with the war effort of the industry. The entire lumbering industry is suffering from shortages of skilled labor, but the greatest needs are centered in the logging camps, experts said.

A spokesman for logging camp operators estimated between 600 and 700 men are needed for logging camps immediately. With between 10,000 and 12,000 loggers at work, the labor shortage is estimated at more than 5 per cent.

A 10 per cent increase in forestry production in 1941 over 1939 is one of the main reasons for the labor shortage. Competition from other industries and enlistments have also contributed to the shortage.

The drain on manpower has been offset to some extent by drafting and training men from the ranks of ordinary labor. Current logging wages range from $4.50 to $5.50 per day for common labor to $10 per eight-hour day for skilled labor, said the spokesman. B. C.'s logging payroll topped $20,000,000 last year.

Higher wages have resulted in longer and more frequent layoffs by loggers, and this is contributing to the shortage. Operators are hoping the federal manpower control board will discourage unnecessary movements and layoffs, stated the spokesman.

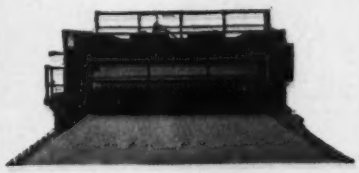
Confirming reports that the shortage of loggers is the most serious since the last war, Nigel Morgan, international representative of the International Woodworkers of America, said skilled men are needed most in Queen Charlotte Island camps, producing airplane spruce for war factories. "With jobs open on the B. C. coast, men are deserting outlying camps in favor of ones closer to their homes and families. More than 50 loggers came down on the last boat from the Queen Charlottes.

"Higher pay and steadier work in shipyards are attracting hundreds of skilled loggers away from the lumbering industry. At least 300 loggers are working in B. C. shipyards," Morgan said. To stabilize labor conditions in logging camps, the I. W. A. executive recommended "industry councils", comprising employer and employee representatives.

How water impurities spoil pulp and paper products, slow production

1. Leave residues in finished products

Dirt, iron, color, organic matter in process water, lower quality of pulp, streak and stain paper.



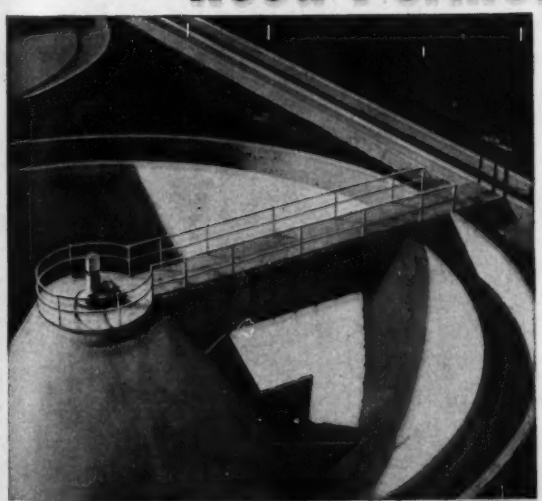
2. Cut capacity of equipment

Adherent deposits clog machine parts through which pulp must pass.

3. Deposit scale in boiler tubes

Hard water scale formation necessitates shutdowns for turbining.

Now, more than ever, paper mills need Permutit conditioned water*



PERMUTIT'S SPAULDING PRECIPITATOR for cold lime soda water softening, iron and color removal. Makes big savings in time, space and chemicals.

A water supply that was "good enough" in normal times, may be a serious handicap now, when pulp is put to special uses and maximum output is essential. Permutit, world's largest manufacturer of water conditioning equipment, can give you complete control of your water supply. Why not let Permutit experts—backed by 29 years of experience—discuss this vital subject with your engineers?

FREE BOOKLET. "Conditioning Water for the Paper Mill" is an authoritative discussion of your water problem. Write for it—it's free. The Permutit Company, Dept. I2, 330 West 42nd Street, New York, N. Y. In Canada: Permutit Company of Canada, Ltd. . . . Montreal . . . Toronto . . . Winnipeg . . . Calgary.

*Trademark Reg. U. S. Pat. Off.

PERMUTIT WATER CONDITIONING HEADQUARTERS

Kraft Paper Demand Very Strong in Midwest

Sulphite Papers Also Firm With Some Book and Specialty Papers Less Active—Paper Stock Market Situation Reported Unsatisfactory — Salesmen Plan To Open Golf Season — Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 27, 1942—The Chicago paper market continues to feel the general decline in printing and advertising resulting from increasing shortages in a wide variety of items which were formerly merchandised through huge advertising appropriations. In general, conditions are little changed over last week although book papers continued to show a more marked reaction to the decline in interest in printed pieces. Krafts were continued very strong, according to reports, while the sulphite markets were also reported as very firm. Specialty groups affected by curtailment in wrapping and other conservation procedure finding the mills far less busy. The waste paper market continued to be unsatisfactory here, although plans to increase waste paper have received added stimulus from government sources during the past few weeks.

Certain-Teed Opens Chicago Offices

The Certain-Teed Products Corporation this week formally opened its new general offices at 120 S. LaSalle Street in Chicago. Offices were transferred from New York City where they had been since 1923. Engineering and manufacturing departments, located in Buffalo, have also been moved to Chicago and the firm's research laboratory is now at 1234 W. Jackson Boulevard. Mayor Edward J. Kelly of Chicago welcomed Bror Dahlberg, chairman of the Board, H. J. Hartley, president, and other executives saying "it is gratifying to me to have one of the largest of the world's manufacturers of roofing and gypsum products decide that Chicago is the logical center for its business operations." Space to be occupied by Certain-Teed has been entirely redesigned and equipped with new furnishings and office equipment.

Salesmen to Hold Golf Outing

The Western Division of the Salesmens Association of the Paper Industry has announced its first golf outing of the 1942 season. According to Ray George of the Tomahawk Paper Company, chairman of the golf committee, Sunset Ridge Country Club at Winnetka, Ill., will be the scene of the initial round-up and the date will be Friday, May 22. Inasmuch as interest in the Association is greater than ever, it is expected by the golf chairman that this will be reflected in the attendance at the monthly affairs which always wind up with The Fall Outing in conjunction with the annual Fall meeting of the National Paper Trade Association.

New Eastern Corporation Sales Head Appointed

H. H. Morrison, newly appointed district sales manager of The Eastern Corporation, is expected to make his appearance in Chicago this week, Mr. Morrison will assume charge of the Eastern offices at 111 W. Washington Street according to an announcement made by John E. Massengale, sales manager, who, until a few weeks ago, was in charge of Eastern sales in this territory.

Inlander Expands Sales Force

The sales organization of the Inlander-Steindler Paper Company, well known Chicago coarse paper jobbers, has been augmented by the addition of four sales executives including W. H. Cluever, formerly with the Cluever Paper Company and C. J. Wolf, Sr., and C. W. Wolf and J. H. Lefkow all of whom were formerly connected with the Humboldt Paper Company.

New Paper Bag Saves Tin

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 27, 1942—A new type of paper bag the Army is using for sending foodstuffs overseas is saving enormous amounts of burlap and tin, the War Department announced today.

Known as "multi-wall", the bag, according to Quartermaster Corps specifications, consists of 6 separate thicknesses of Kraft paper, a heavy and durable type that can "take it" during long distance shipments involving rough handling and oft-repeated storing and restoring conditions. Its use is very much on the increase for shipping flour, sugar, beans, peas and salt to troops in remote tropical or cold climate bases. Formerly these foodstuffs were sent in tin or burlap containers, but today tin, a critical material, is badly needed for ordnance materials, while burlap has more vital Army uses.

As an added advantage, the paper bag is moisture proof, for it is provided with a layer of paper known as "asphalt laminated", through which water cannot penetrate. Thus there is virtual assurance that all foods stored in the new type bags will reach their destinations in perfect condition, and that they will last for months without being affected by extremes in temperature.

WPB EXPLAINS ITS POLICIES

(Continued from page 7)

ing information and rulings with respect to War Production Board orders and regulations or with respect to Branch policy, to submit their requests *in writing*.

Cooperation with Canadian Industry (8)

In the formulation and administration of necessary regulation of the domestic industry, every effort will be made through proper channels, to obtain the cooperation of the Canadian pulp and paper industry where such domestic regulation may directly or indirectly affect Canadian interests.

Advance Planning (9)

In general, it is believed that successful prosecution of the war will necessitate selective production as far as the products of the industry are concerned. It will therefore be the policy of the Branch to endeavor to anticipate requirements and develop plans accordingly as far in advance as may be possible.

NONPAREIL SEPARATES EASILY FROM WATER

. . . . . IT'S GUARANTEED AGAINST HIGH ACIDITY

HUNDREDS OF OPERATORS have made important savings with Nonpareil Turbine Oil because it stopped the losses and troubles that come from high acidity—and its running mate, poor demulsibility.

Experience has shown that high acidity in an oil frequently causes emulsions. When condensate in the oil system mixes with the oil to form these emulsions, the water and oil become extremely difficult to separate. Then, operating troubles begin. Sludge forms in the oil system. Governor operation may become erratic. Of course, the water may be removed, but only by costly treating and at a great loss of oil, time, and labor.

There is one turbine oil that eliminates all these troubles. It's Nonpareil Turbine Oil—the only *oil* that is *guaranteed in writing* against excessive acidity formation. Records from over 600 turbines, taken over the past 15 years, prove that Nonpareil will live up to this guarantee.

Ask a Standard Lubrication Engineer to tell you why Nonpareil will last as long as your turbine and give trouble-free lubrication every day of its life. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois, for the Engineer nearest you. In Nebraska, write Standard Oil Company of Nebraska at Omaha.

Copr. 1942, Standard Oil Company (Indiana)

NONPAREIL
TURBINE OIL

1. Stability Against Oxidation and Sludge.
2. Non-Corrosive. 3. Good Demulsibility.
4. Proper Viscosity Grades.

STANDARD OIL COMPANY (INDIANA)

LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATI

Hold Ladies Night at Kalamazoo

KALAMAZOO, Mich., April 27, 1942—The annual Ladies Night party of the Michigan Division of the American Pulp and Paper Mill Superintendents Association was held at the Park American Hotel Saturday evening, April 18, 1942. The attendance was a trifle under that of previous years, there being 160 present.

Sponsoring Concerns

The dinner was preceded by a reception sponsired by approximately 40 allied concerns, who serve the paper industry in Michigan districts as follows:—Kalamazoo Tank and Silo Company, E. M. Sergent Pulp and Chemical Company, Rice Barton Corporation, Gus Riedel and Son, Beloit Iron Works, E. J. Kelly Company, Cameron Machine Company, R. T. Vanderbilt Company, Bird Machine Company, Herman Manufacturing Company, Hooker Electrolytic Company, Georgia Kaolin Company, Black-Clawson Company, Waterbury Felt Company, S. V. Cottrell, Philadelphia Felt Company, Albany Felt Company, Holyoke Wire Cloth Company, Sinclair Wire Company, American Cyanamid Corporation, Douglas Robbins Company, Huron Milling Company, Stowe-Woodward, Inc., A. E. Woolam, Hercules Powder Company, American Wire Cloth Company, A. E. Staley Manufacturing Company, Heller & Merz, Chromium Corporation of America, Frank B. Eilers, Williams-Gray Company, Arthur McPhillips, Ciba Company, Edgar Brothers Company, Howard Smith Paper Mills and Porier Control Company.

"Buster" Griffith Is Toastmaster

L. L. "Buster" Griffith presided as toastmaster, a most fortunate choice on the part of the committee, for "Bus" really turned in a fine job. His vein of humor, and ability to keep the program moving on schedule was indeed refreshing. National Secretary Bob Eminger was up from Miamisburg and gave a short address, assuring the members that the annual convention in Grand Rapids would be held but he said he was unable as yet to give much detail on the program. Silent tribute to Walter Hadley who passed on a week previous was tendered. A very satisfactory floor show was put on following dinner, after which dancing was enjoyed until a late hour.

Those in Attendance

Among those present were the following:—

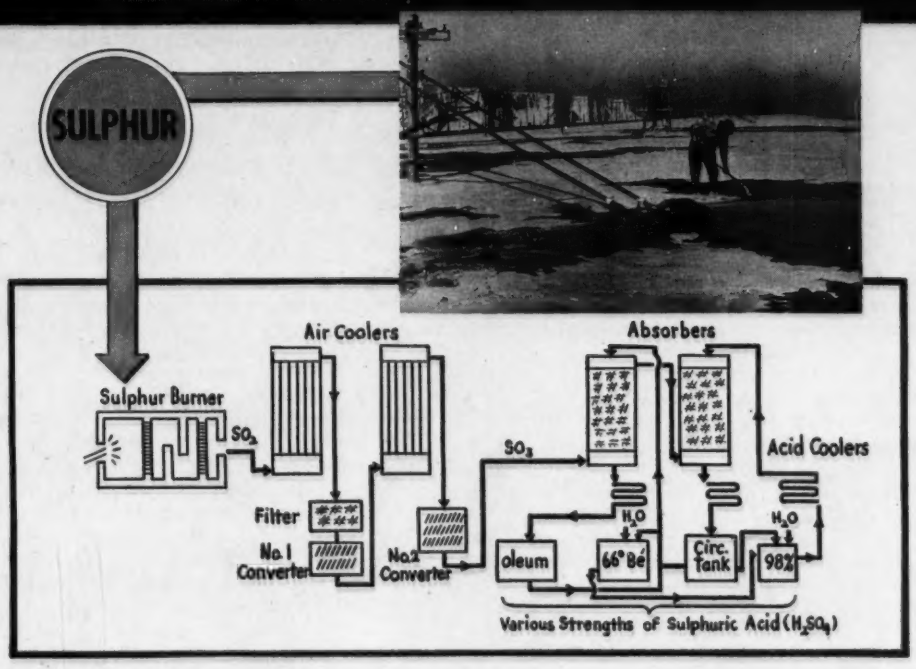
Mr. and Mrs. R. C. Alden, Watervliet Paper Company; Mr. and Mrs. Wm. H. Astle, Michigan Paper Company; Mr. and Mrs. Ray Barton, Michigan Paper Company; Mr. and Mrs. Jake Boodt, Kalamazoo Paper Company; Miss Leatha Booth; Miss Edna Buder; Mr. and Mrs. Otto K. Buder; Mr. and Mrs. Robert Buss, Hercules Powder Company; Mr. and Mrs. O. W. Callighan, Edgar Brothers Company; Mr. and Mrs. Fred L. Chappell, Jr., Sutherland Paper Company; Mr. Loker Chittenden, Michigan Alkali Company; Mr. and Mrs. A. W. Cole, Rex Paper Company; Mr. and Mrs. S. V. Cottrell, National Aniline Division, Allied Dye and Chemical Corporation; Mr. and Mrs. E. T. A. Coughlin, Bryant Paper Company; Mrs. John D. Dickson; Mr. and Mrs. Arthur G. Dreis, Hercules Powder Company; Desk Sergeant Dyer, Fort Custer, Michigan; Mr. Homer Eaton, Michigan Alkali Company; Mr. and Mrs. Frank B. Eilers, Orr Felt and Blanket Company;

Mr. and Mrs. Russel Elliot; Mr. Robert L. Eminger, National Secretary-Treasurer, American Pulp and Paper Mill Superintendents Association; Mr. and Mrs. George K. Ferguson, Watervliet Paper Company; Mr. and Mrs. A. W. Field, Watervliet Paper Company; Mrs. Lois Eilers Field; Mr. and Mrs. Otto F. Fischer, Bryant Paper Company; Mr. and Mrs. L. E. Fitzgerald, Hercules Powder Company; Mr. and Mrs. Merton S. Fogerty, Michigan Paper Company; Mr. and Mrs. Harvey Freeman; Miss Jane Anne Gerry; Mr. and Mrs. Bert Gilman, Bryant Paper Company; Mr. and Mrs. L. L. Griffiths, Jr., Williams & Gray Company; Mr. J. F. Halladay, American Coating Mills; Mr. and Mrs. Hod Heath, Rex Paper Company; Mr. and Mrs. Bill Herring, Parchment Sales Company; Mr. and Mrs. Fred Hodgemire, Hawthorne Paper Company; Mr. and Mrs. P. J. Isvolt, Acme Steel Company; Mr. John King, Rex Paper Company; Mrs. H. R. King, Rex Paper Company; Mr. and Mrs. Dave Klausmeyer, Illinois Envelope Company;

Mr. and Mrs. L. H. LaLiberte, Kalamazoo Vegetable Parchment Company; Miss Helen Little, American Cyanamid and Chemical Corporation; Tom Luey, American Coating Mills; Mr. and Mrs. Lloyd J. Lynd, Poirier Control Company; Marguerite May; Mrs. Mill; Mr. and Mrs. Lee Mimms, Kalamazoo Paper Company; Mr. and Mrs. Wm. H. Monsson, Hooker Electro Chemical Company; Mr. and Mrs. M. C. Mulder, Allied Paper Mills; Dave Murchison; Mr. and Mrs. Vern Myers; Mrs. Donald Nendorf; Mr. and Mrs. Henry Nendorf, Rex Paper Company; Mr. and Mrs. Robert Nendorf; Mr. and Mrs. W. E. Nuyen; Mr. and Mrs. Jacob Parent, Noble & Wood Machine Company; Mr. and Mrs. Al Perlick, Kalamazoo Vegetable Parchment Company; Mr. and Mrs. Chas. Raney, Monroe Paper Products Company; Miss Margaret Raney; Mr. and Mrs. Asa P. Rice, Kalamazoo Vegetable Parchment Company; Mr. and Mrs. George H. Rice, Kalamazoo Vegetable Parchment Company; William Riedel;

Mr. John Roslund, Asten-Hill Manufacturing Company; Mr. and Mrs. John G. Ruimveld, Rex Paper Company; Mr. and Mrs. E. C. Rutz, Bryant Paper Company; Mr. and Mrs. J. A. Santilli, Southern Kraft Company; Mr. and Mrs. E. N. Saville; Mr. and Mrs. L. J. Scheid, Watervliet Paper Company; Mr. and Mrs. Frank F. Schmiege, American Wire Cloth Company; Mr. Lester Schmiege; Margaret Sewall; Mr. W. L. Shaw, Heller & Merz; Mr. and Mrs. A. L. Sherwood, Sutherland Paper Company; Mr. Donald Shickley, Kalamazoo Stationery Company; Mr. and Mrs. George Shinners, American Wire Cloth Company; Mr. and Mrs. H. Sinclair, American Cyanamid and Chemical Corporation; Mr. and Mrs. C. B. Smith, Huron Milling Company; Mr. Robert B. Stewart, Kalamazoo Vegetable Parchment Company; Mr. and Mrs. Glenn Sutton, Sutherland Paper Company; Mr. and Mrs. Carl Swanson, Allied Paper Mills; Mr. P. A. Talbot, Jr., R. T. Vanderbilt Company; Mr. and Mrs. E. B. Taylor, American Cyanamid and Chemical Corporation;

HOW SULPHUR SERVES INDUSTRY



SULPHURIC ACID

(Contact Process)

Sulphur is burned to sulphur dioxide (SO_2). This is cooled, filtered, and passed to a converter. Here a catalyst causes the sulphur dioxide to take on an atom of oxygen to form sulphur trioxide (SO_3). Sulphur trioxide then compounds with water into sulphuric acid (H_2SO_4).

Sulphuric acid is used in the preparation of so many products—fertilizer, rayon, steel, textiles, etc.—that it has been called the "pig iron" of the chemical industry. Its consumption is the yardstick often used to gauge the volume of industrial activity. It is easily and economically made from Sulphur produced by Texas Gulf because it is 99½% pure and free from arsenic, selenium and tellurium.

Sulphuric acid is of vital importance to American industry. To the acid manufacturer, a dependable source of Sulphur is of equal importance. Texas Gulf Sulphur Company has above ground ready for shipment more than a year's supply for the entire nation. This, together with large underground reserves and efficient mining methods, is assurance of an unfailing supply.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Newgulf and Long Point, Texas

B. M. Thomas, American Coating Mills; Edna Thorne; Mr. and Mrs. C. E. Van Buren, Albany Felt Company; Mr. and Mrs. A. Van Emst; Mr. James Verdon, American Cyanamid and Chemical Corporation; Mr. and Mrs. Joe Waber, Rex Paper Company; Mr. and Mrs. H. O. Ware, Hercules Powder Company; Bill Weber; Mr. and Mrs. J. H. Weber, Allied Paper Mills; Mr. and Mrs. Arnold Weller, Sutherland Paper Company; Fred B. Wells; Mr. and Mrs. Joseph Widmeyer, Allied Paper Mills; Mr. and Mrs. Leo A. Willoughby, Bryant Paper Company; Mr. Walter Wolfe, Mac Sim Bar Paper Company; Mr. and Mrs. Art E. Woolam, A. E. Woolam Company.

Box Advisory Committee Formed

WASHINGTON, D. C., April 29, 1942—The Bureau of Industry Advisory Committees, WPB, today announced the formation of the Setup Box Industry Advisory Committee. A setup box, as distinguished from a folding box, is a paper box delivered to the user in the form ready to use.

William W. Fitzhugh, Chief, Folding & Setup Box Section, Containers Branch, is Government Presiding Officer.

Committee members are: J. H. Patterson, F. N. Burt Co., Inc., Buffalo, New York; Adolph Dorfman, A. Dorfman Co., Inc., New York, New York; Allen K. Schleicher, F. J. Schleicher Paper Box Co., St. Louis, Missouri; Charles A. Allen, Sprowles & Allen, Philadelphia, Pennsylvania; F. R. ZurSchmiede, Finger Paper Box Co., Louisville, Kentucky; N. Karasik, Pharmacy Paper Box Co., Chicago, Illinois; Walter P. Miller, Jr., Walter P. Miller Co., Inc., Philadelphia, Pennsylvania; G. R. Kreider, Jr., Lebanon Paper Box Co., Lebanon, Pennsylvania; A. G. Burry, Wayne Paper Box & Printing Corporation, Fort Wayne, Indiana; A. H. Bond, Consolidated Paper Box Company, Sommerville, Massachusetts; J. W. Scully, Puget Sound Paper Box Co., Seattle, Washington; W. J. McClintock, Jr., McClintock Corporation, Harrisburg, Pennsylvania.

Frank W. Smith Made Vice President

The National Paper and Type Company of 120 Wall street, New York, announced on April 1 that the manager of its Paper Department, Frank W. Smith, had been elected a vice president of the company. Mr. Smith has been connected with the concern for over twenty-eight years. He is also a Director of the National Paper & Type Company de Cuba, S. A. of Havana, Cuba and secretary and treasurer of the United States Paper Exporters Council. Mr. Smith has travelled extensively in Europe and South America and is widely known among paper mills in the United States and the printing trade in Latin America.

Boston Paper Men to Hold Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 27, 1942—The annual outing of the Boston Paper Trade Association is to be held June 8 at some country club in Metropolitan Boston.

It has been decided to hold the annual outing of the New England Paper Merchants Association at the Oakley Country Club, Watertown, Mass. The date, previously announced, is May 18.

Obituary

Frank J. Timmerman

Frank J. Timmerman, until recently mill manager of the Northern Paper Mills, Green Bay, Wis., died at a Green Bay hospital the morning of April 20. He had been in ill health most of the time since suffering severe injuries in an automobile accident about three years ago near Glens Falls, N. Y., while on a business trip. He never was able to resume his duties full time after several months of hospital confinement. He entered the Green Bay hospital in March for treatment of another ailment, but died of coronary thrombosis.

Mr. Timmerman was 49 years old. He was born in Green Bay August 20, 1892, and began working for the Northern Paper Mills when 16 years old. He was advanced in various departments and left Green Bay after a few years to work for the Rhinelander Paper Company, Rhinelander, Wis., and the Marathon Paper Mills, Rothschild, Wis. In 1921 he returned to Northern as mill superintendent, and in 1929 was made mill manager. His ill health forced his retirement June 1, 1941. He had spent most of his time since then at his cottage on Green Bay shore.

As a past president of the American Pulp and Paper Mill Superintendents Association, Mr. Timmerman was honored at its convention at Green Bay last fall by being made an honorary life member in recognition of his services. He was a member of the Rotary club, the Catholic Order of Foresters, and the Elks lodge.

Survivors are the widow; two sons, Edwin and Frank Jr.; three daughters, Bernice and Jane, Green Bay, and Mrs. Vern Halverson, Oxnard, Calif.

Funeral services were held April 23 at St. John's church, Green Bay, and burial was made in Allouez cemetery.

Herbert Q. Eldredge

[FROM OUR REGULAR CORRESPONDENT]

WALLOOMSAC, N. Y., April 27, 1942—Herbert Q. Eldredge, prominently connected with the Windsor Paper Company, dropped dead from a heart attack this week while on duty at the plant. He was born in Mystic, Conn., but had resided in Hoosick Falls for the past fifty-five years. At one time he was treasurer of the Walloomsac Paper Company and was also on the staff of the Walloomsac Paper Company, and the Stevens & Thompson Paper Company, of North Hoosick, for several years. When that concern closed its mills at North Hoosick and Walloomsac he became affiliated with the Windsor Paper Company. He was prominently connected with a number of fraternal organizations. The principal survivors are a son and a brother.

Bids Asked for Currency Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 29, 1942—Bids will be received on May 14 by the Treasury Department for furnishing distinctive paper for printing currency and public debt securities of the United States during the fiscal year 1943.

The estimated quantity of paper required for currency is 145,000,000 sheets or about 1750 tons, and for public debt securities 40,000,000 sheets or about 765 tons.

A change of horses is not indicated

PRODUCTION OF TITANOX pigments at this time exceeds all former records as the makers expend every effort to supply government needs and at the same time meet civilian requirements. • Thus TITANOX pigments, equal to a major proportion of 1941 tonnage sales in excess of requirements for defense orders, still are available to paper manufacturers with which to develop opacity, whiteness and brightness in their products for normal use.

TITANIUM PIGMENT CORPORATION

SOLE SALES AGENT

111 Broadway, New York, N. Y. • 104 South Michigan Avenue, Chicago, Ill.
350 Townsend St., San Francisco, Cal. • 2472 Enterprise St., Los Angeles, Cal.

TITANOX

TRADE MARK

TITANOX

REG. U.S. PAT. OFF.

OPACITY WHITENESS BRIGHTNESS

Drastic Price Regulation Decreed by OPA

To control the inflationary rise in the cost of living, Leon Henderson, Administrator of the Office of Price Administration, issued April 28 a general price regulation in effect May 11, 1942. The general price regulation, Mr. Henderson stated, "is strictly a wartime measure. It will apply for the 'duration' and be abandoned as soon as possible after peace comes. General price control means a guarantee to the American people that their costs of living will remain stable. The order is only part of a broad plan in which taxes, savings, consumer credit restrictions, expansion of social security classifications and other means will be used to siphon off as much spending power as possible."

In a statement of considerations involved in the issuance of this General Maximum Price Regulation, the Office of Price Administration declared that, "This general regulation will be subject to many refinements and particular revisions. Supplementary regulations will be issued. These will seek to cure difficulties of a technical nature. More important, they will change prices and price margins. They will be issued expeditiously. Accordingly, the first supplementary regulations may themselves be of a relatively general approach subject to further readjustments as time and experience point the way."

Price regulations applicable directly to the paper and pulp industry are as follows:

129—Paper, paper products, raw materials for paper and paper products. Manufacturers' ceiling price level as of October 1-15, 1941, effective May 11, 1942.

130—Standard newsprint paper. Manufacturers, converters, distributors and merchants. Price level as of October 1-15, 1941, same as April 1, 1938. Effective May 11, 1942.

Section 9, listing the commodities exempted from the regulation, include pulpwood, stumpage and logs.

Joseph D. Reed Jr. Retires

The Champion Paper and Fibre Company announces the retirement of Joseph D. Reed, Jr., manager of its Cleveland office.

Mr. Reed has felt for some time that he should be permitted to retire and take a much needed rest after 36 years of service. Only upon his insistence has Champion consented reluctantly to permit his retirement.

The difficulty of replacing such a popular man has been increased because his assistant, Herbert W. Suter, Jr., has entered the Army. Champion feels that they have made a happy selection in C. F. Chaplin, who has been with the company for several years at Hamilton and Chicago. Mr. Chaplin becomes Manager of the Cleveland Office May 15th.

R. B. Whittemore Goes with S. A. Bicking

DOWNINGTOWN, Pa., April 29, 1942—R. B. Whittemore, formerly manager of the York plant of the Certain-Teed Products Corporation, is now associated with the S. Austin Bicking Paper Manufacturing Company at Downingtown in the capacity of assistant general manager.

Pacific Mills Acquire Timber Tract

Approximately ten square miles of timberland on Vancouver Island, valued at over a million dollars, has been acquired by Pacific Mills Ltd., one of the leading pulp and paper production firms of British Columbia. The company operates plants at Ocean Falls on the northern B. C. coast and a converting plant at Vancouver, B. C. Plans for development of the newly acquired timber area are now being completed.

The timber runs almost exclusively to hemlock, and the pulpwood will be boomed at Beaver Cove and towed across the Straits to Ocean Falls for conversion into pulp and paper products.

Initial payment for the timber stand, previously owned by the Cargill grain interests of Minneapolis, was $400,000. The deal is the largest of its kind since completion of the multi-million-dollar transaction whereby Puget Sound Pulp and Timber interests purchased the holdings of Canadian Forest Products Ltd., and Wood English, Ltd., in the Nimpkish River country, Vancouver Island, a few months ago.

The Cargill timber, now taken over by Pacific Mills, Canadian subsidiary of Crown Zellerbach Corporation of San Francisco, is adjacent to the great Nimpkish tract which Ossian Anderson and his Puget Sound associates acquired. The latter is now being prepared for large-scale logging under the direction of Fred B. Brown, F. W. Kirkland and K. B. Fraser of Vancouver.

Pacific Mills has placed a contract with E. R. Taylor Construction Company for the building of truck roads out of Englewood and in the vicinity of Bonanza and Ida Lakes.

Sydney Ferguson Heads Mead Corp.

DAYTON, Ohio, April 28, 1942—Sydney Ferguson of New York was elected today president of the Mead Corporation at the annual directors' meeting. He succeeds George H. Mead, who becomes chairman of the board. Mr. Mead served as president for thirty years, while Mr. Ferguson was a vice president.

Other officers named were C. R. Van De Carr, Jr., executive vice president; Speed Warren, Alan G. Goldsmith and J. O. Mason, vice presidents; Murray Smith, secretary and A. H. Mahrt, treasurer.

Fundamentals of Lithography

Enrolments and inquiries to date regarding the intensive course in the Fundamentals of Lithography justify the belief that the required number of candidates will be obtained within the next thirty days. Any and all companies, therefore, that have failed to consider this important matter or have not yet reached a final decision should give it immediate attention. The Lithographic Technical Foundation, Inc., will be glad to answer inquiries pertaining to this course which is scheduled to start on June 29th and close on August 28th.

HIGH ABOVE the tall-masted clipper ships . . . the scurrying ferries . . . and bustling harbor traffic, one of the wonders of the world was reared to span the East River and join Manhattan Island with Brooklyn Heights. Uniting as it did two important parts of the great and growing port of New York, succeeding generations have witnessed the immeasurable service rendered by the Brooklyn Bridge.

LANDMARK OF ACHIEVEMENT

NEW YORK AND BROOKLYN SUSPENSION BRIDGE, DRAWN BY CHARLES GRAHAM, REPRODUCED THROUGH COOPERATION OF THE BROOKLYN EAG

The Niagara Alkali Company and the Electro Bleaching Gas Company have now embarked upon a similar union of resources and facilities to broaden and advance, by consolidating into one great enterprise, their essential services in the field of chemical supply. The quality reputation of all products . . . the fine traditions of management . . . will be maintained as heretofore, to distinguish this greater American business.

Niagara
ALKALI COMPANY
60 EAST 42nd STREET, NEW YORK, N. Y.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
Liquid Chlorine

EBG NIAGARA ALKALI COMPANY

To Investigate Sorg Dispute

Dispute between the Sorg Pulp Company, Ltd., Port Mellon, B. C., and its employees, members of the recently organized Local 297, International Brotherhood of Pulp Sulphite and Paper Mill Workers, has been referred to a conciliation and investigation board. The dispute concerns union recognition and improved working conditions.

The board comprises Judge J. O. Wilson, of Ashcroft, B. C., appointed on the joint recommendations of the two other members; Percy R. Bengough, Vancouver, representing the employees, and Brig.-Gen. J. A. Clark, Vancouver, representing the company.

Industrial Chemistry of Colloids

The MacMillan Company has just published an interesting 540-page book entitled "Industrial Chemistry of Colloidal and Amorphous Materials" by Warren K. Lewis of M. I. T., Lombard Squiers of DuPont and Geoffrey Broughton of the Eastman Kodak Company.

The book discusses the theoretical bases for the developments and industrial application of the materials of high molecular complexity. It explains the chemical structure, properties and behavior of colloidal and amorphous materials in the light of all important investigation from Faraday to Langmuir.

It covers such subjects as the structure of liquids, viscosity, surface tension and orientation, adsorption, suspensoids, emulsiods, electrochemistry, gelation, foams, thermoplastics, protective coatings, pigments, lacquers, paper (wood, pulping processes, bleaching, paper structure, beating-sizing, coating), plastic fibers, (rayon), nitrocellulose, leather, rubber, ceramics adhesives, synthetic resins and plastics, and textile fibers.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y., at $5.50 per copy.

N. F. Bartlett Discusses Packing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 27, 1942—Nathaniel F. Bartlett, traffic manager of Hollingsworth & Vose Company, paper manufacturers, discussed the problem of training new help in the proper methods of handling and packing freight at a meeting in connection with the sixth annual campaign for "Perfect Shipping," sponsored by the New England Shippers Advisory Board. The meeting was held Thursday evening, April 23, in the South Station, attended by more than 400 shippers and transportation representatives.

To Be Brown Agent in Houston

The L. S. Bosworth Company of Houston, Texas, has been appointed agent in that area for Forward Linen Ledger, Resistall Linen Ledger and Resistall Index Bristol, all 100% rag products of the L. L. Brown Paper Company, Adams, Mass. The latter two papers are unusually distinctive in that they are highly resistant to water, grease, perspiration, oil and abrasion.

FOR SALE
IMMEDIATE DELIVERY
Now in storage Pacific Coast

50 lb. White Book Paper
1449¼ Reams 33 x 44
1303 " 35⅞ x 51
946¼ " 38½ x 58½
Grain long way.

M. F. White Pure Sulphite Tissue Paper
Basis 24 x 36—11½ lbs. 480 sheets

			lbs.
625	Reams	12¼ x 14	1425
711	Rolls	405 m/m wide x 22" Dia.	109072
628	"	360 m/m wide x 22" Dia.	86549
222	"	346 m/m wide x 22" Dia.	28444

At BUFFALO, N. Y.
White .010 Bristol Coated One Side Board
15,000 sheets size 36 x 51—weight 640 lbs.
per 1000 sheets
Subject prior sale.
Write Offers—
Box 539 — Louisville, Ky.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending April 25, 1942

STOCKS

	High	Low	Last
A. P. W.	1⅛	1	1
Armstrong Cork Co.	23	21⅞	22⅛
Celotex Corp.	6⅞	6⅝	6⅝
Celotex Corp., pf.	70	68	70
Certain-Teed Products Corp.	1⅞	1⅞	1⅞
Certain-Teed Products Corp., pf.	26⅝	26	26⅝
Champion Paper & Fibre Co.	15⅞	15⅝	15⅝
Champion Paper & Fibre Co., pf.	96	95	95
Congoleum Nairn Co.	12⅜	12⅛	12⅛
Container Corp. of America	12⅝	12⅛	12⅛
Continental-Diamond Fibre Co.	8	7¾	7¾
Crown-Zellerbach Co.	10⅝	10⅛	10⅛
Crown-Zellerbach Co., pf.	80¼	78	78
Flintkote Co.	11	10¾	10¾
Robert Gair	2	1⅞	1⅞
Robert Gair, pf.	9½	9½	9½
International Paper Co.	12⅜	11⅝	11½
International Paper Co., pf.	53	52	52
Johns-Manville Corp.	54	50⅝	50⅝
Johns-Manville Corp., pf.	125½	125½	125½
Kimberly Clark Corp.	26⅛	25¾	26⅛
MacAndrews & Forbes	16¼	15⅝	15⅝
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	24¼	24	24¼
Mead Corp.	6⅞	6⅝	6⅞
Mead Corp., pf.	66	66	66
Paraffine Companies, Inc.	22	21⅞	21⅞
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	8½	8	8⅛
Rayonier, Inc., pf.	25	25	25
Ruberoid Co.	17	16⅛	17
Scott Paper Co.	26½	26	26½
Scott Paper Co., pf.	107¼	107¼	107¼
Sutherland Paper Co.	18½	18½	18½
Union Bag & Paper Corp.	8⅛	7⅞	7⅞
United Paperboard Co.	3¼	3	3¼
U. S. Gypsum Co.	44	42	43
U. S. Gypsum Co., pf.	164	164	164
West Virginia Pulp & Paper Co.	14	14	14

BONDS

Abitibi Pulp & Paper Co. 5s '53	51⅛	50¼	50¼
Celotex Corp. 4½s '47	96¾	96⅝	96⅝
Certain-Teed Products Corp. 5½s '48	87	85¾	86
Champion Paper & Fibre Co. 4¾s '50	105	105	105
Champion Paper & Fibre Co. 4¾s '50	103	103	103
International Paper Co. 6s '55	105	104¾	104¾
International Paper Co. 5s '47	103½	103½	103½
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending April 25, 1942

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	....	....	....
Hummel-Ross Fibre Corp.	4¼	4¼	4¼
National Container Corp.	8	8	8
St. Regis Paper Co.	1¾	1⅝	1⅝
St. Regis Paper Co., pf.	109	109	109
Taggart Corp.	2¾	2¾	2¾

BONDS

American Writing Paper Co. 6s '61	81	80	81

Kimberly-Clark Nets $4.88

Net income, after taxes and reserves, reported last week by Kimberly-Clark Corporation, Neenah, Wis., last week was $553,747.46 for the first quarter of 1942. Profit of the William Bonifas Lumber Company, wholly owned subsidiary, was estimated at $1,750 for the same period.

This represents a net profit on common stock of the corporation of $406,052.46 or 83 cents per share for the 488,173 shares outstanding. The profit per share for the comparable period of 1941 was 68 cents.

Net income of the corporation for the 12 months period ending March 31, 1942 was $2,917,008.98, and of the William Bonifas Lumber Company, $74,007.85. Net profit on common stock for the 12 months period was placed at $2,382,229.04. This represents a profit of $4.88 per share, as compared with $2.90 for the preceding twelve months.

Container Corp. Profits Up

The Container Corporation of America for the three-month period ending March 31, 1942, reports a net profit of $548,646, equal to 70 cents per share after all charges, including interest, depreciation, reserve for year end adjustments, and provision for Federal income and excess profits taxes. This latter provision is estimated on the basis of 80% of the profit before taxes.

This compares with an adjusted net profit of $368,365 equal to 47 cents per share for the corresponding period in 1941.

Shipments for the three-month period totaled $15,068,000 as compared with $8,071,000 for the same period in the previous year.

Gair Co. Issues Earnings Report

The Robert Gair Co., Inc., and United States subsidiaries report for the three months ended March 31, 1942, a profit of $360,250, after depreciation, interest and dividends of subsidiary company and provision of $878,000 for federal income and excess profits taxes, but before interest on income notes.

The Gair Co. of Canada, Ltd., wholly owned subsidiary of Robert Gair Co., Inc., reports for the three months ended March 31, 1942, profit of $83,446, in Canadian dollars, after provision of $114,000 for Dominion and Provincial income taxes.

Due to the discount on exchange of Canadian dollars into United States currency, issue of a consolidated statement of earnings is impractical.

Canadian International Loses

The Canadian International Paper Company yesterday reported for 1941 a consolidated net loss of $322,583 after all charges, taxes and reserves. For 1940 the company had reported a net income of $1,238,425. Net sales were $57,357,725, compared with $52,854,257.

Included in earnings for 1941 was other income of $4,511,197, the largest item of which was $3,337,855 for profit realized on foreign exchange. Income and excess profits taxes applicable to prior years of $2,223,831 were deducted from the income account.

Paraffine Nets $3.21

Paraffine Companies, Inc., and subsidiaries for the March quarter, reports a net profit, after provision of $90,754 for Federal income and excess profits taxes, of $498,864, equal, after dividend requirements on 4% cumulative convertible preferred stock, to 99 cents a share on 476,062 common shares, compared with $350,295 or 69 cents a common share last year. Nine months to March 31: Net profit, after Federal income and excess profits taxes of $507,085, $1,601,591, equal to $3.21 a share of common stock, com-

pared with $1,023,820 or $2 a share in nine months to March 31, 1941.

United Paperboard Nets $1.03

The United Paperboard Company and subsidiaries for the nine months to February 28, reports a net profit of $287,511, equal after nine months' dividend requirements on 8,733 shares of 6% non-cumulative preferred stock, to $1.03 each on 240,000 shares of common. This is in contrast to the net loss of $4,529 reported for nine months ended February 22, 1941. Net sales increased to $4,188,092 from $2,353,931 to previous period.

Hinde & Dauch Profits Up

The Hinde & Dauch Paper Company and subsidiaries for the March quarter, reports a net profit of $262,537, equal after dividend requirements on 35,900 shares of $5 cumulative preferred stock to 60 cents each on 360,250 common shares, against revised net profit of $148,847, or 29 cents a common share, last year. Provision for Federal taxes in 1942 quarter are at rate of 55% for income and surtaxes and 75% for excess profits taxes.

Mead Corp. Nets $486,053

The Mead Corporation and Subsidiaries—Twelve weeks to March 21: Net profit, $486,053, equal, after preferred dividends, to 62 cents each on 625,000 common shares, against $362,037, or 41 cents a common share, for twelve weeks to March 22, 1941. Provision for Federal and State taxes on income was $1,231,751, compared with $146,365 in 1941.

National Gypsum Earns $173,362

The National Gypsum Company for the three months ended March 31, 1942 reports a net income of $173,362 after taxes and charges, equal after preferred dividends to 8 cents a share on 1,321,458 common shares; year ago $249,255 and 14 cents a share on 1,261,458 common shares.

Ruberoid Earns 47 Cents

The Ruberoid Company for the March quarter reports a consolidated net profit of $188,844, equal to 47 cents a share, against $193,097, or 49 cents a share, last year; net sales, $5,805,569, compared with $4,258,412.

Sutherland Earns 85 Cents

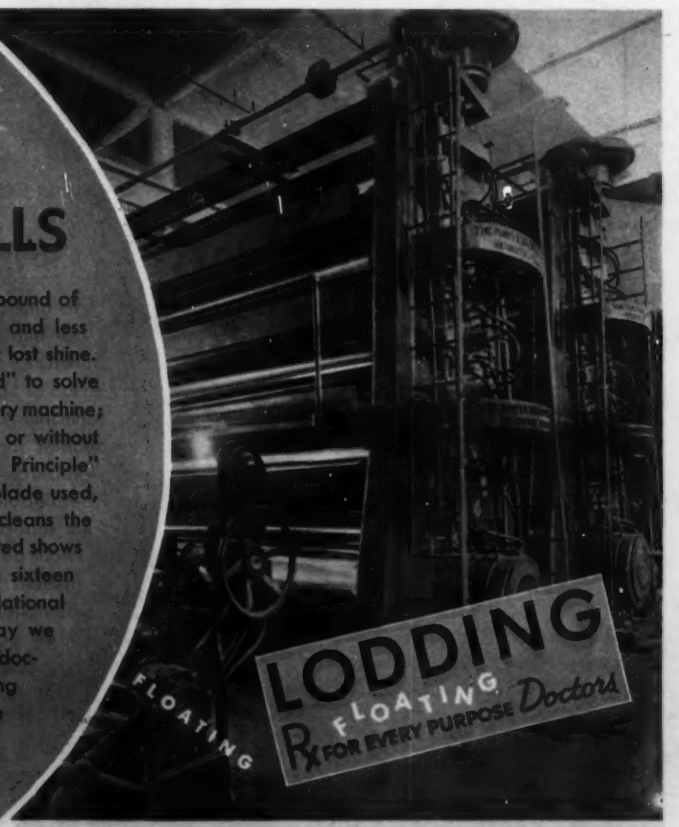
The Sutherland Paper Company for the March quarter reports a net profit of $244,194, after $100,000 reserve for contingencies, equal to 85 cents each on 287,000 common shares, against $148,463, or 51 cents a share, last year.

Northern Mills Nets $605,193

The Northern Paper Mills for 1941, reports a net income of $605,193, equal after preferred dividends, to $8.12 each on 220,894 shares.

16 ALWAYS SHINY CALENDER ROLLS

An ounce of prevention is worth more than a pound of cure on calender rolls. It is less troublesome and less costly to keep rolls shiny than to restore their lost shine. Lodding Doctors are "prescription-engineered" to solve the problems of each installation position on every machine; thus they can safely be used continuously, with or without Lodding Oscillators. The patented "Floating Principle" develops the maximum flexibility of the thin blade used, thus it naturally (not forcefully) contacts and cleans the full width of the rolls. . . . The installation pictured shows two Pusey & Jones Calenders equipped with sixteen Lodding Floating Doctors at the mill of the National Container Corp., Jacksonville, Florida. . . . May we send one of our engineers to discuss your doctoring problems? Write either the Lodding Engineering Corp., Worcester, Mass., or the W. E. Greene Corp., Woolworth Bldg., N. Y.



Paper and Materials More Easy

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 27, 1942—Many paper manufacturers and jobbers here reported last week that supplies both of raw materials and finished stock appeared a trifle more easy than they have been since the first of the year.

Curtailment of a number of items, notable automobile accessories, automobiles, electrical appliances has had its effect on the local trade. Direct by mail advertising has fallen off considerably with a deterring effect on demand for the better grades of paper. Curtailment of production also has had a like effect on demand for heavy wrapping paper and cartons. The general situation is far from bad, however, and most of the trade is fairly well pleased in view of general war conditions.

Building paper and roofing demand continued to decline slightly last week, due to drastic restrictions made on new construction and repairs. It is believed here that new construction will be only about half this year it was in 1941. Most dealers have well balanced stocks and are watching the general trend carefully before buying.

Demand for kraft for bags and wrapping paper continued heavy last week in spite of efforts of merchants to conserve the supply. Retail merchants, notably in the food lines are urging customers to bring their own baskets and are wrapping only such foods as must be wrapped or sacked. Much better business, however, has caused the bag and wrapping paper demand to remain at a high level.

Tissues were active last week with prices firm to strong. Demand for waxed paper continued good and an increase was reported in consumption of waxed cartons, due to the coming of warm weather and the opening of the real ice cream season.

Steady prices were reported in the waste paper market with supplies some stronger. Mills are buying readily, some of them, it is believed, trying to build up some reserves. The rag market was active with medium and low grades being in demand.

Pacific Mills Start Logging Program

Preliminary work in connection with an extensive logging development on the north end of Vancouver Island, was recently put under way for Pacific Mills, Ltd., north foot of Campbell avenue, Vancouver, B. C. The entire program will entail an outlay of about three quarters of a million dollars.

Initial contract, covering construction of about seven miles of truck roads working out of Englewood and in the vicinity of Bonanza and Ida Lakes, was recently awarded E. R. Taylor Construction Company, Ltd., 8699 Hudson street, Vancouver.

It is expected the roadwork will be completed late this summer, after which construction of a cribbed type storage dam will be undertaken. Although not definitely settled at this date, it is anticipated the dam will be built by contract. The development will also include construction of logging camps, installation of logging equipment and provision of log booming facilities.

Logging operations will in all probability get under way some time next year.

WIN YOUR
BATTLE OF PRODUCTION
• For heavy duty industrial metal cleaning in steel plants and metal working plants . . . chemical processing work in paper and textile mills.
Use a Cowles Silicate
★DRYMET (REG. U. S. PAT. OFF.) Anhydrous Sodium Metasilicate
Drymet can be used alone or with other alkaline products, phosphates, soaps, etc., to give shorter cleaning time and better results. Drymet will give you free-flowing, non-caking detergents.
★DRYORTH (REG. U. S. PAT. OFF.) Technically Anhydrous Sodium Orthosilicate
Dryorth is a concentrated, trigger-action, high pH detergent silicate with excellent penetrating and wetting-out properties. It has speedy, dirt-loosening, prolonged suspending-emulsifying power.
★CRYSTAMET (REG. U. S. PAT. OFF.) Pentahydrate Sodium Metasilicate
Crystamet is a pure, perfectly white, free-flowing granular product with the normal 42% water of crystallization. It can be used alone on medium pH jobs.
• These silicates are sold at heavy chemical prices
THE COWLES DETERGENT CO. • Cleveland, Ohio
Please quote prices on (Quantity)
☐ DRYMET _____ Drums (400 lbs. net)
☐ DRYORTH _____ Drums (400 lbs. net)
☐ CRYSTAMET _____ Bbls. (300 lbs. net)
Name
Company
Address
THE COWLES DETERGENT COMPANY
7016 EUCLID AVENUE • CLEVELAND, OHIO

CONSTRUCTION NEWS

Framingham, Mass.—The Dennison Manufacturing Company, Howard street, manufacturer of paper specialties, labels, tags, etc., has awarded general contract to Oliva Brothers, 410 Union avenue, Framingham, for one-story addition to plant, about 160 x 200 feet, for which bids recently were asked for erection. It will be used largely for storage and distributing service, with cost reported close to $50,000, with equipment. Work is scheduled to begin at once. Isador Richmond, 248 Boylston street, Boston, Mass., is architect.

Chicago, Ill.—The Pilcher-Hamilton Company, 340 North Dearborn street, commercial paper products, has leased space in building at 111 North Canal street, totaling about 30,000 square feet of floor area, and will occupy for storage, distribution, offices and other departments. Former five-story building of company at first noted location recently was seriously damaged by fire, resulting in removal to other address noted. Plans are maturing for rebuilding the North Dearborn street building, following insurance adjustment, with work to be carried out by William J. Scown Building Company, 54 West Randolph street, Chicago. Estimate of fire loss has not been announced.

New York, N. Y.—The Globe Cardboard Novelty Company, Inc., 515 Greenwich street, manufacturer of cardboard and paper specialties, has leased space in building at 603 Greenwich street, and will occupy for expansion.

Knowlton, Wis.—Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., manufacturer of coated and other paper stocks, has active work in progress on new power dam and hydroelectric generating station at Knowlton, in course of construction for number of months past, as previously noted in these columns. Contracts are now being awarded for certain materials and equipment for power station, including brick and tile work to the Gagnon Clay Products Company, Green Bay, Wis., and for steel sash to Wisconsin Bridge & Iron Company, Milwaukee, Wis. Main construction work is being carried out by company forces. Project will represent a total investment of about $1,500,000, including power station equipment, and will be completed at earliest possible date. Thomas Utegaard is company engineer, in charge.

Los Angeles, Calif. — Pioneer-Flintkote Company, 5500 South Alameda street, Vernon, Los Angeles, manufacturer of roofing papers, box board specialties, etc., has awarded contract to the Automatic Sprinkler Company, 6627 McKinley avenue, Los Angeles, for installation of sprinkler system in new one-story addition to mill, now in course of erection, previously referred to in these columns. Structure will be one-story, and is reported to cost approximately $15,000, with equipment. Other equipment requirements for building, which will be used for storage and distributing service, will be purchased in near future. The Austin Company, 777 East Washington boulevard, Los Angeles, has the general erection contract.

New York, N. Y.—The A-1 Paper and Twine Company, Inc., 514 West 36th street, commercial paper products, has leased the main floor and second story in building at 323 West 25th street, and will occupy for storage, distribution and other operations. Present establishment will be removed to new location, where increased facilities will be provided.

Woonsocket, R. I.—The Imperial Paper Box Corporation, 252 Newport street, Brooklyn, N. Y., writes in part as follows: "We have been informed that in a recent issue of the Paper Trade Journal you stated we were moving our plant to Woonsocket, R. I. This report is erroneous. Obviously some over enthusiastic real estate operator or Chamber of Commerce official circulated this false information."

Roanoke, Va.—The American Viscose Corporation, Delaware Trust Building, Wilmington, Del., manufacturer of cellulose rayon products, has approved plans for expansion in branch mill at Roanoke, for increased capacity in processing division. Work will be placed under way at once, and is reported to cost in excess of $80,000, including equipment.

Taftville, Conn.—Aralac, Inc., manufacturer of fiber products, has work in progress for expansion in local mill, including new production units and installation of equipment to increase output by about 300,000 pounds per month, making total rating of about 800,000 pounds per month at plant. Work is scheduled for completion during summer.

Middletown, Conn.—The Inland Container Corportion, Nelbar road, manufacturer of corrugated boxes and containers, has begun erection of proposed new addition to plan, recently referred to in these columns, and will soon award a number of miscellaneous contracts for different branches of work, to be handled through B. D. Morgan & Company, 224 Bellemonte avenue, Middletown, which has the general construction award. It will be one-story and equipped for increased production at plant. Cost is estimated at $40,000, including equipment.

New Companies

New York, N. Y. — The Victory Containers Corporation has been incorporated with capital of 100 shares of stock, no par value, to manufacture a line of paper boxes and containers. New company will operate at 458 Ninth avenue, where corporate office will be located.

Chicago, Ill.—The Eag-O-Matic Company Packaging Division, 742 East 75th street, has been chartered with capital of $20,000, to manufacture and deal in paper containers and packaging specialties. The incorporators E. Little, R. L. and Harry H. Hitzeman, 105 West Madison street. Last noted is company representative.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 29, 1942—The Government Printing Office has received the following bids for 431,200 pounds of 42 x 58 poster paper: R. P. Andrews Paper Company, 7.35 and 7.03 cents; Barton, Duer & Koch Paper Company, 7.15 cents; Marquette Paper Company, 7.1, 7.275, 7.05 and 7.3 cents; Cauthorne Paper Company, 7.19 cents; Mudge Paper Company, 6.76 cents; Stanford Paper Company, 6.81 cents; and Butler Company, 6.38 cents.

For 14,846 pounds of 34 x 42, 25% rag, white glazed manifold paper: R. P. Andrews Paper Company, 19.95 cents; Barton, Duer & Koch Paper Company, 23 cents; Wilcox Walter Furlong Paper Company, 25 cents; and Bradner Smith & Company, 21.6 cents.

For 80,000 pounds of 50% rag, 8 x 10½ white manifold paper: Old Dominion Paper Company, 21.738 cents; Paper Corp. of U. S., 22 cents; Barton, Duer & Koch Paper Company, 18.8 cents; Chicago Paper Company, 21 cents; R. P. Andrews Paper Company, 21.28 cents; and Wilcox Walter Furlong Paper Company, 21.49 cents.

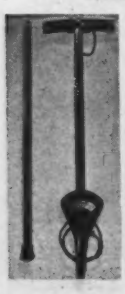
The Cauthorne Paper Company has been awarded the contract for furnishing the Government Printing Office with 7,500 pounds of No. 2, 36 x 48 kraft wrapping paper at 5.65 cents and the same firm will also furnish 8,320 pounds of same 24 x 36 at 5.65 cents. Awards for other paper items at the Printing Office during the past few days include the following.

Butler Paper Company will furnish 40,000 pounds of 25% rag, 22 x 34 white mimeograph paper at 10.09 cents and the same firm will also frunish 15,300 pounds of same 28 x 34 at 10.09 cents. The Whitaker Paper Companv will furnish 36,500 pounds of 50% rag, 10¾ x 13 yellow index paper at 17.5 cents and the same firm will also furnish 35,400 pounds of same 8½ x 16 at 17.5 cents and also 6,100 pounds of same 10¾ x 13 at 17.5 cents. Barton, Duer & Koch Paper Company will furnish 14,000 pounds of 50% rag, 22½ x 28½ yellow index paper at 16.38 cents.

R. P. Andrews Paper Company will furnish 78,500 pounds of U. S. postal card bristol board 22½ x 28½ at 6.49 cents. The same firm will also furnish 89,600 pounds of same at 6.49 cents and also 38,510 pounds of same at 6.49 cents. Walker Goulard Plehn Company will furnish 150,000 pounds of 50% rag, 8 x 14 white ledger paper at 16.15 cents and also 158,000 pounds of same 10½ x 16 at 16.15 cents and 158,000 pounds of same 10½ x 16 at 16.15 cents. Birmingham & Prosser Company will furnish 90,000 pounds of 25% rag, 8 x 10½ white bond paper at 13.095 cents.

R. P. Andrews Paper Company will furnish 8,025 pounds of 50% rag, 32½ x 42 blue ledger paper at 17.65 cents and the same firm will also furnish 93,000 sheets of 19½ x 26½ buff gummed paper at $13.39 per M sheets. Mudge Paper Company will furnish 45,225 pounds of 38¾ x 50 drumhead manila paper at 21.15 cents. Aetna Paper Company will furnish 11,010 pounds of 45½ x 64 white offset paper at 7.27 cents.

NOT ALL PAPER-MAKERS ARE MAGICIANS



Even experienced machine hands can't guess roll temperatures accurately. Therefore, now, more than ever before, with varying pulps, substitute chemicals and new men, it is essential to provide your men with a convenient and dependable instrument for temperature determination. Thus they can maintain the proper progressive temperatures of the drying roll train. The Cambridge Surface Pyrometer is the ideal instrument for this purpose.

Write for Bulletin 1945

The Cambridge is made in a hand model and also with an extension to reach inaccessible rolls.

CAMBRIDGE INSTRUMENT CO., INC.
3732 Grand Central Terminal, New York, N. Y.

CAMBRIDGE SURFACE PYROMETERS

Royal S. Kellogg Speaks at Yonkers

[FROM OUR REGULAR CORRESPONDENT]

YONKERS, N. Y., April 27, 1942—"The war we are in is more than a war for survival. It is one for human dignity and decency," said Royal S. Kellogg, secretary of the News Print Service Bureau, New York City, speaking before the Yonkers Kiwanis Club today in connection with observance of Kiwanis International Canada-United States Goodwill Week.

"Canada, with a population of a little more than 11,000,000 people or one-twelfth that of the United States has made a tremendous war effort since September 3, 1939. Starting with nothing but determination to defend the things that are worthwhile in this world, Canada's army has grown from 4,500 to 260,000 in two and one-half years.

"During the same period her reserve army has grown from 55,000 to 155,000 men. Her navy personnel has increased from 1,500 to 27,000 and her air force from 4,000 to 100,000 at the beginning of 1942 with a goal of 170,000 at the end of this year. Canada is making guns, tanks, planes and ships by the thousands.

"Four army divisions are overseas. Over 9,000 ships carrying 55 million tons of cargo have been convoyed with small losses. Her 90 training schools filled with young men from Canada, Australia and New Zealand are sending thousands of airmen to the battle front. On top of this Canada is goving a billion dollars in munitions, raw materials and foodstuff to Britain and expects to make a free loan of $700,000,000 additional.

"How is this being done?" you ask. "It is being done in the way Churchill told the British Empire that the fight would be fought and the victory won. Already World War II to date has cost Canada more than five years of World War I; while 47 per cent of the cost of the former was paid out of taxes, 73 per cent of this one has been so paid. Only 44 per cent of the national income of Canada is being left for civilian use in 1942. Heavy income taxes are paid by individuals, while the minimum business tax is 40 per cent and the excess profits tax 79½ per cent.

"Limits to prices, services and salaries have been fixed and wages have been increased only according to a cost-of-living index. Inflation has been better controlled than in the United States, and official authority says that at this time there is not a single strike or wage dispute in Canada. These are some of the things that are done when a nation of free men is determined to maintain its freedom."

In conclusion Mr. Kellogg noted that "the century-old cooperation and exchange of populations between the United States and Canada had been inevitably drawing the two countries into one economic unit. The present struggle has greatly hastened that irresistible tendency. The North American continent furnishes abundant basis for the hope that peace on earth is possible among nations of good will."

Increasing Morale

A manual for business executives and plant managers on "How to Boost Production Through Increased Employee Morale" has just been issued by the Labor Relations Institute. The pamphlet details practical methods for organizing management-labor committees as a means of obtaining greater output. It tells also how to formulate and administer suggestion systems and effective grievance machinery, and it includes practical pointers on how to enlist union and employee cooperation in plans for speeding production.

Discussed, too, are effective uses of posters, bulletin boards, loudspeaker systems and production scoreboards. In addition, the booklet provides a check-list of fifteen industrial "morale killers" which retard production and lower employee morale. This manual may be obtained by writing to: Lawrence Stessin, chief—Industrial Division, Labor Relations Institute, 1775 Broadway, New York, N. Y.

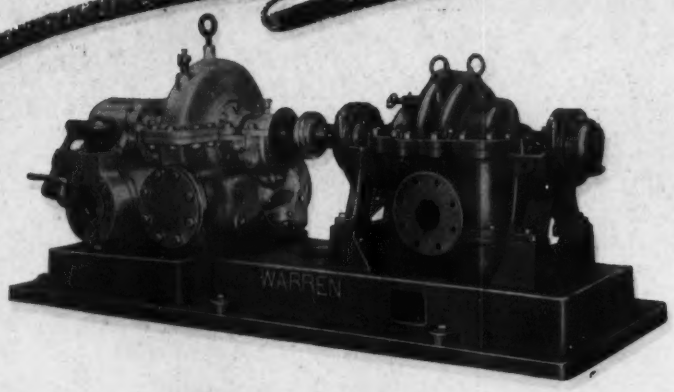
Straw Paper for News

The situation as regards paper stocks in Ireland is not favorable according to a report to the Department of Commerce. The quantity of paper and cardboard, excluding newsprint, imported each year has been about 27,000 tons, and the amount that can be expected now is about 20 per cent of that figure. The outlook for newsprint is said to be gloomy, and apart from certain small shipments already arranged for, there is little prospect of any further imports of this type of paper, and the small quantity which could under the most favorable circumstances be produced by the Irish mills would relieve the situation to a very minor degree.

The report also states that prices for newsprint have been advanced to such a point that all Dublin newspapers have increased their prices one penny per copy.

The Clondalkin Paper Mills, one of the largest paper mills in Ireland, has announced that it will use wheaten straw for paper production and thereby utilize a large quantity of straw which has accumulated as a result of the extensive growing of wheat during the last season. Thousands of tons of this straw are said to be available in the Dublin area alone, and the use of it will not affect supplies for litter, nor will it interfere with the market position.

From "Helper" to "HEADMAN"



because of STANDOUT Performance...

In 1935, a large eastern paper mill bought a Warren Boiler Feed Pump to do stand-by service for another make of pump which was to carry the main load. When the arrangement failed to work out, the Warren Pump, while rated at a lower capacity, *carried the entire load* by itself, without trouble . . . so the pumps were interchanged.

And, in the seven years that this Warren Pump has been on the job, *not a single cent* has been spent on it for repairs.

If this is the kind of performance *you* want, both in your Power Plant and Mill, specify Warren Pumps.

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC., WARREN, MASSACHUSETTS

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 114 April 30, 1942 No. 18

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION. Twenty-third Annual Convention, Pantlind Hotel, Grand Rapids, Mich., June 16-18.

FOR A BETTER TAX PROGRAM

It is difficult to prepare an adequate and equitable tax plan. It is even more difficult to pass any tax legislation without compromise. Few taxation schemes have been adopted in the past without vigorous opposition. The huge amount of internal revenue required to be raised today to meet rapidly increasing expenditures for the war effort, makes it more difficult than ever to frame a good tax bill. Among the various tax proposals none appear adequate. A definite, consistent tax program to be followed for the duration of the war, instead of haphazard tapping of revenue sources, was submitted this month to the Ways and Means Committee of the House of Representatives by the Committee on Federal Finance of the Chamber of Commerce of the United States. Two members of the Chamber's committee, chairman Ellsworth C. Alvord and Roy C. Osgood presented the recommendations. The recommendations are as follows: (1) A 100% tax upon excess profits during the war period, to be levied only after every effort has been made to define true normal profits. (2) A corporate normal tax of 25% and a war surtax of 10%, with appropriate adjustments for corporations having net incomes of less than $25,000.

The third point advocates increased individual normal and surtaxes to produce at current income levels an additional $1 billion. (4) A retail sales tax, without exemptions (except for direct federal and state governmental purchases), at an effective rate approaching 10%, with appropriate graduations for necessities and luxuries. (5) Corresponding excise taxes upon services, etc., which are not subjected to the retail sales tax. (6) A 5% withholding tax, collected at the source, on payments of compensation, dividends and interest to individuals. (7) The allowance of a deduction (with the maximum limited to 20% of net icome) to both individuals and corporations for the amount invested by individuals or corporations in non-negotiable Government bonds, non-interest bearing during the war, negotiable and bearing 2% interest immediately upon the cessation of hostilities, payable in five annual installments beginning immediately after the war, and taxable as paid at capital-gain rates, which in no event should exceed 15%.

(8) Continuity of the present provisions applicable to capital gains and losses, without substantial change. (9) Essential improvements in the so-called technical provisions of the present law. (10) The formulation of new security issues designed to attract maximum additional borrowings from individuals, corporations, and savings institutions. (11) The elimination of all non-essential Government activities. (12) The reduction to the bone of all essential non-war activities.

In a statement, Ellsworth C. Alvord said in part: "The Chamber has consistently advocated heavy rates of tax upon excess profits, in order to prevent profiteering and unjust enrichment from the war emergency. During the period of the war, it is believed that the maximum should be imposed, approaching or even equalling 100%. Concurrently, the Chamber always has insisted that the standards for measuring excess profits must be fair; that confiscatory rates must be imposed only upon the large excess profits. The higher the rates the more important becomes the absolute protection against their imposition upon normal profits. . . . The following (subject to the credits finally allowed and their computation) is a possible maximum schedule: 50% on excess profits up to 25% of the credit; 75% on excess profits between 25% and 50% of the credit; and 100% on all excess profits over 50% of the credit."

In commenting on needed changes in excess profits tax law, Mr. Alvord said in part: "The earnings credit must be improved; 100% of the average base-period earnings should be allowed; some substitute should be found to alleviate the hardships resulting from the use of the four years 1936 to 1939 as the base period; and income allocated under section 721 should be included in the years to which allocated. The normal growth provisions should be extended and should be retroactively made applicable to corporations filing returns under Supplement A. Supplement A itself requires extensive revision. The application of rates based upon the ratio of income to excess profits tax credit, rather than upon dollar amounts, will remove many inequities and permit the elimination of the impossible provisions of Supplement B, relating to 'highest bracket amount'. . . . Adequate protection must be provided for normal tax (or excess-profits tax or normal tax) deficiencies; and both returns should be audited and liabilities adjusted concurrently."

In commenting on corporation normal tax and sur-

tax, Mr. Alvord said in part: "The Treasury recommendation for a 55% tax on normal corporation profits is opposed. This proposal means that a corporation with no excess profits would have left after federal tax a maximum of 45% of its prewar average earnings or, alternately, a maximum return of 3.6% or 3.15% on its invested capital. . . . After most careful consideration, it is our conclusion that a 35% tax on normal profits is the heaviest levy which business enterprises can assume, even during a par period. This rate just about doubles the normal tax of 18% which was in effect in 1939. It is almost triple the normal tax of 12% which was in effect during the First World War. By any standard, it is an exceedingly high rate to be borne by non-war profits. From a revenue point of view, the division of such a tax between normal and war surtax is not an important consideration. For convenience, we suggest a 25% normal tax, and a 10% war surtax."

In a statement on estate and gift taxes, Roy C. Osgood, stated in conclusion that, "The injurious effects upon industry of excessive estate taxes are unfortunately not confined to the particular company involved in the estate. All who are engaged in such enterprises are directly affected. The resulting demoralization impairs the productive capacity of the nation. Productive capacity means not only the production of war goods and services but the production of a flow of income that can be annually taxed. An extreme estate tax, essential to a capital levy, has no place in an emergency fiscal policy."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1942		Corresponding Weeks, 1941	
March 14	101.7	March 15	91.8
March 21	103.0	March 22	91.7
March 28	103.0	March 29	94.5
April 4	101.3	April 5	93.5
April 11	99.4	April 12	95.0
April 18 (Prelim.)	*100.5*	April 19	94.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	103.8	103.4	*102.6*	...	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date	67.9	76.8	89.6	67.3	79.9	85.0	88.9	*102.7*
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

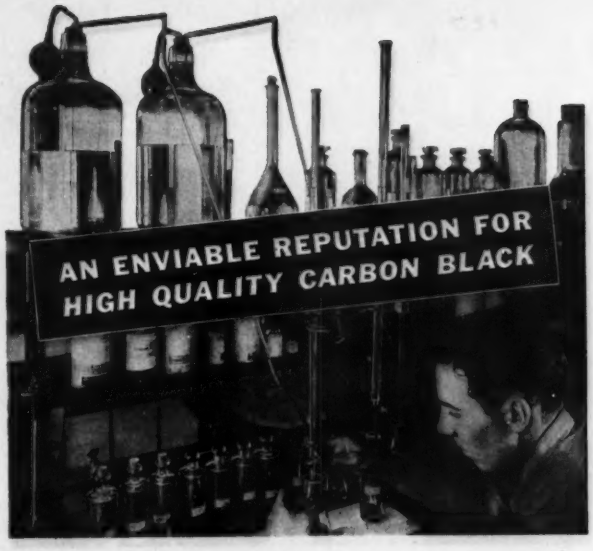
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Ave.
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	67	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	98	93	88
1942	102	101	*101*	..	..	..	..	..	..	..	..	..	..

Week ending Mar. 14, 1942—100
Week ending Mar. 21, 1942—101
Week ending Mar. 28, 1942—101
Week ending Apr. 4, 1942—100
Week ending Apr. 11, 1942— 93
Week ending Apr. 18, 1942— *94*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



Among users of Carbon Black throughout the country, Continental Carbon Company is recognized as an outstanding source of supply. This reputation has been established by high quality products and thorough, systematic cooperation with customers regarding their use. The company's plant is one of the largest and most modern Carbon Black plants in the world, and its laboratory facilities are of the same high standard.

Continental specializes in the production of Carbon Black, and all of the technicians employed in manufacture, research and customer assistance are selected for their special experience and training in this field.

If you are looking for quality and uniformity in Carbon Blacks and efficient service you will find both at Continental. Many of the country's most critical users are regular customers and the demand for Continental blacks is constantly increasing.

Our staff will gladly assist you in selecting the type, of the two described below, which will best meet your specific requirements. Get in touch with us today, and benefit by the modern, efficiently produced quality of Continental blacks.

2 TYPES TO CHOOSE FROM

UNCOMPRESSED BLACK

Continental Uncompressed Black meets the most stringent requirements for ease of dispersion and intensity of coloring. Accepted throughout the paper industry, you can depend upon it to be of the highest quality—and consistently uniform.

CONTINENTAL P

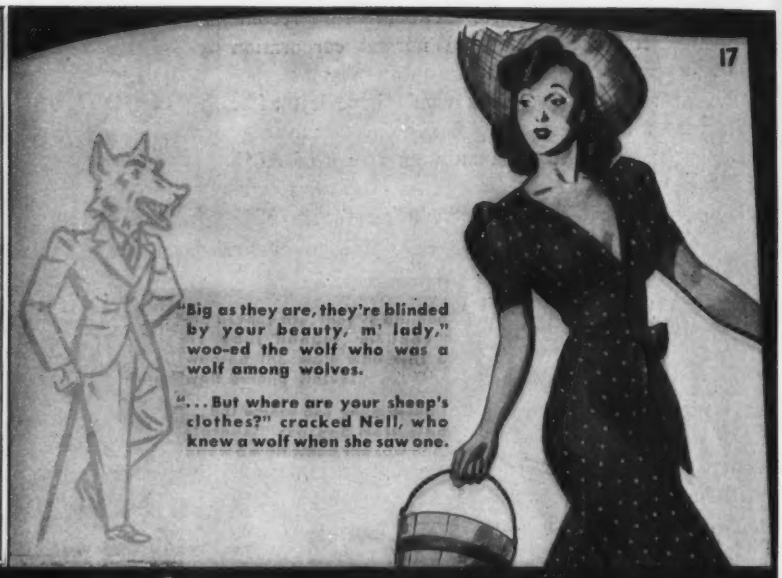
This special new Continental Pellet Black offers advantages in cleanliness, ease of handling, and because of its extra soft structure, assures good dispersion and retention. Continental P Black is lower in cost and is being used with satisfactory results.

Continental CARBON BLACK

CONTINENTAL CARBON COMPANY, 295 Madison Ave., New York, N. Y.
Akron Sales Office: Peoples Bank Bldg., Akron, Ohio
SALES REPRESENTATIVES: Ernest Jacoby & Co., Boston, Mass. • Marshall Dill, Los Angeles and San Francisco, Cal.

"What big eyes you have"

SAID THE FARMER'S DAUGHTER ON PAGE 17 TO THE WOLF ON PAGE 18


17
"Big as they are, they're blinded by your beauty, m' lady," woo-ed the wolf who was a wolf among wolves.
"... But where are your sheep's clothes?" cracked Nell, who knew a wolf when she saw one.

17
"I loaned them to m' brother who's a traveling salesman," gagged the wolf, growing discouraged.
"No doubt people will have trouble keeping *him* from the door," teased Nell, who had met salesmen before.

17
"Yes, and you're going to have trouble getting rid of me, too, m' wise-cracking beauty ... because I'm here to stay till Krebs do us part!"
"*What*—in the name of Little Red Riding Hood—does that mean?"

17
"Show-through means I'm coming through from the other side ... and the easy way to prevent *that* is to use Krebs pigments. They make paper white and opaque, make print stand out clearly and sharply."

"Folks, as a wolf who knows his way around take my word for it: Krebs pigments are just the thing if you're troubled with show-through. And in addition to various white pigments, Krebs offers a complete line of chemical dry colors. Included in this line are the easily dispersive dry colors, adapted for use by the paper industries especially in the production of coated and wallpapers."

KREBS RESEARCH
KREBS
MEANS PIGMENT PROGRESS

KREBS PIGMENT AND COLOR CORP.
1007 Orange Street, Wilmington, Del.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Patents Committee Report, 1941-1942*

By Charles W. Rivise[1]

Removal of Patent Office

One of the most momentous events in the history of the patent system was the removal of part of the Patent Office from Washington, D. C. The patent Examining Divisions, Supervisory Examiners, Interference Examiners, Law Examiners, Classification Examiners, Drafting Division, Docket Division, and Law Library moved to Richmond during the early part of February, 1942, to make room for the rapidly expanding war and defense agencies. The Trade-Mark Division, Board of Appeals, Scientific Library, and search room remain in Washington at least for the present.

The new Patent Office in Richmond is in an old tobacco warehouse on exactly the same site on which stood the Confederate Patent Office. The part of the Patent Office remaining in Washington has been crowded together on the first floor of part of the Commerce Building. At both places the quarters are cramped and are far from being conducive to effective patent work. Fortunately, the new arrangement is only for the duration of the war. However, the splitting of the Patent Office between Washington and Richmond will long leave its mark on our patent system.

National Patent Planning Commission

On December 12, 1941, the President established the National Patent Planning Commission.

The Executive order creating the Commission reads as follows:

"WHEREAS both American industrial development and our people generally have greatly benefited by the products of American inventive genius;

"AND WHEREAS it is essential even in time of war to plan for a full utilization of the nation's expanded industrial capacity with the return of peace, a problem to which the inventive genius of our citizens can be applied at this time and which also requires a study to be made of our existing patent laws and procedure, together with other appropriate action, by a commission familiar with the problems of science, industry, agriculture, labor, and the consumer;

"NOW, THEREFORE, by virtue of the authority vested in me as President of the United States, I do hereby order as follows:

1. There is hereby established the National Patent Planning Commission consisting of five members to be appointed by the President.

2. The Commission is authorized, in conjuction with the Department of Commerce, to conduct a comprehensive survey and study of the American patent system, and consider whether the system now provides the maximum service in stimulating the inventive genius of our people in evolving inventions and in furthering their prompt utilization for the public good; whether our patent system should perform a more active function in inventive development; whether there are obstructions in our existing system of patent laws, and if so, how they can be eliminated; to what extent the Government should go in stimulating inventive effort in normal times; and what methods and plans might be developed to promote inventions and discoveries which will increase Commerce, provide employment, and fully utilize expanded defense industrial facilities during normal times.

3. The Commission may appoint such officers, committees and subcommittees as it may deem necessary to carry out its functions.

4. The members of the Commission and of such committees and subcommittees as may be formed by it shall serve as such without compensation but shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of their duties.

5. The Commissioner of Patents and his office will assist the Commission, which is also authorized to call upon other offices and agencies of the Government for such aid and information as may be deemed necessary for its work.

6. The Commission shall report the results of such investigations and studies to the President, together with its recommendations."

The personnel of the Commission has been announced as follows:

Charles F. Kettering
Owen D. Young
Chester C. Davis
Edward F. McGrady
Francis P. Gaines

The personnel of the Commission is such that we can expect a fair and worthwhile study of our patent system.

Patent Litigation in the Pulp and Paper Industry

The following decisions of particular interest to the pulp and paper industry were handed down since February 1941:

Sutherland Paper Co. v. Auburn Carton Co., 48 U. S. pat. Q. 612 (C. C. A. 5, 1941).

The Circuit Court of Appeals reversed the decision

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI; Chairman, TAPPI Patents Committee; Caesar & Rivise, Philadelphia, Pa.

of the District Court for the Northern District of Illinois (46 U. S. pat. Q. 19), and held valid Rutledge patent 1,906,337 for a cellular carton.

(See the Development Report of the Patents Committee for 1941 in *Paper Trade Journal* of March, 27, 1941).

Connecticut Paper Products Co., Inc. v. New York Paper Co., 50 U. S. pat. Q. 180 (D. Md. 1941), in which was held invalid Ericson patent 1,940,406 for paper drinking cup.

Trend of Patent Decisions

During the past few years, there has been relatively little patent litigation in the pulp and paper industry. This is very likely due to some extent to the increasing tendency of the courts to raise the standard of invention so high that few can aspire to have the stamp of inventive ingenuity impressed upon their inventions.

In the very recent case of *Cuno Engine Corp. v. Automatic Devices Corp.*, 51 U. S. pat. Q. 272, the Supreme Court, in holding a cigar lighter of very ingenious construction unpatentable held that a "new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling."

The new attitude of the courts toward patents and inventors is very unfortunate, for it can only result in a discouragement of research and invention. It was the liberal spirit of our patent system that spurred Edison to try thousands of cellulosic fibers until he finally found the one that resulted in the incandescent lamp. Had the courts applied the "flash of genius" test to Edison's incandescent lamp patent, it would surely have been found invalid. Likewise, in the case of thousands of other epicmaking inventions in the fields of mechanics, electricity, and chemistry.

Papermakers! Build Bridge of Friendship

Bridge Builders Calling Papermakers of America, a regular Sunday broadcast by the British Broadcasting Corporation from London, featured a talk by Frank Huckle. The program is announced by Jack Peach. Mr. Huckle, who is general manager of John Dickinson & Co., Ltd., King's Langley, Herts, England, is well known in the United States and Canada and was over here in 1939. He is a member of the Papermakers Association of Great Britain and Ireland and of the Technical Association of the Pulp and Paper Industry.

After Mr. Huckle broadcast his personal greetings to R. G. Macdonald of TAPPI, John Traquair of the Mead Corporation, Ed Knapp of the Champion Paper and Fibre Company, Frank Egan of the John Waldron Corporation, and others, he discussed the problems of manufacture of coated paper under wartime conditions. No fundamental change has been made, but the body stock is made from straw and other materials not ordinarily used. The addition of coating to paper saves fiber. Envelopes are used over and over again, using a gummed paper to cover the old address and to reseal the envelope. Research and development work continues in England in spite of many handicaps due to the war.

Mr. Huckle urged the papermakers of America to actively Build Bridge of Friendship by writing about their problems and activities. Engineers, machine tenders, beatermen, cooks, bleachermen, superintendents, executives, chemists, and other pulp and paper mill men should address their letters to Bridge Builders, care of Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y. All letters will be forwarded to England for replies from pulp and papermakers over there.

The program "Bridge Builders Calling Papermakers of America" is a shortwave broadcast each Sunday at 8:25 P.M. on the 31-meter band at 9.58 megacycles, and the reception is clear and strong. Listen and help Build the Bridge of Friendship.

Maine-New Hampshire TAPPI to Meet

The spring meeting of the Maine-New Hampshire group of the Technical Association of the Pulp and Paper Industry will be held in Portland, Maine, on May 22 and 23, 1942.

On Friday morning, May 22, a visit is planned at the S. D. Warren Company plant, arrangements having been made through the courtesy of Everett Ingalls, Production Manager. The afternoon will be given over to golf and bridge at the Portland Country Club, and at 7:00 P.M. a banquet will be served in the Club dining room. The name of the speaker will be announced later. After the banquet an orchestra will be on hand in the ballroom for those who care to dance.

The group will then meet again in the Eastland Hotel at 9:30 A.M. Saturday, May 23, where a general discussion on "Present Status and Possible Future Trends in Supply of Raw Materials and Their Substitutes for the Pulp and Paper Industry" will take place under the chairmanship of W. A. Ketchen of Fraser Paper, Ltd. Following this the meeting will break up into various subgroups for the purpose of discussing mill problems as gleaned from the questionnaires. These discussions will be of a panel type.

The manager of the Eastland Hotel assured us that we should experience no trouble in obtaining rooms if we make our reservations early.

Kindly send questions and your reservation to T. M. Barry, Chairman, Madawaska, Maine, promptly.

B. C. Pulp and Paper Production

Production of pulp and paper in B. C. during the year 1941 showed a decided increase according to figures recently released by the Provincial Government, Department of Lands, Forest Branch. During 1941, a total of 276,000 tons of newsprint was produced in the province as well as 75,453 tons of wrapping and other paper, for a total of 351,453 tons of paper.

In addition there were 172,811 tons of pulp shipped out of B. C. during 1941, besides the 322,000 tons which were manufactured into paper within the province.

The growth in production was revealed in the following figures which shows that while the newsprint production was very slightly eclipsed in 1926, that the production of wrapping and other papers during this year reached the highest level in the history of B. C.

Year	Newsprint	Other Papers
1934	267,406	26,777
1935	262,123	33,287
1936	276,710	41,443
1937	264,136	53,026
1938	179,639	39,348
1939	216,542	50,870
1940	*262,144*	*68,428*
1941	*276,000*	*75,453*

Cupriethylenediamine as a Solvent for Cellulose Fractionation*

By F. L. Straus[1] and R. M. Levy[2]

Abstract

A direct fractionation method for cellulose is presented. The solvent used is an aqueous solution of cupriethylenediamine, and the technique of fractionated precipitation is employed to obtain the frequency distribution curves. The weight average molecular weight and the corresponding polymerization degree is determined from the intrinsic viscosity in cupriethylenediamine. The nature of the cellulose—copper-ethylenediamine complex is discussed in relation to the fractionation experiments.

In a previous paper *(10)* the general method of determining the cupriethylenediamine disperse viscosity was given. The method was substantiated by a series of experimental results, and the relatively high stability of these solutions was pointed out. This high stability of the solvent and its cellulose solutions are important factors in making a suitable fractionation.

Mark *(8)* has pointed out that a reliable, direct fractionation for cellulose in the range of all polymerization degrees would be of great importance and most welcome. The reason for this is that the usual methods involving the esterification of the cellulose, such as nitration, give reasonable results for the fractionation of the esters but are only of analytical value as far as the cellulose itself is concerned, as it is impossible to denitrate the fractions and reuse them for synthetic purposes without considerable degradation.

In view of this situation, the direct fractionation method as given herein should help to overcome the difficulties encountered in preparing suitable fractions of cellulose for various synthetic purposes and provide a simple analytical method. It is not intended to correlate the present results, in detail, with those of other investigators. The principal purpose of this paper is to present the fractionation method, the experimental results, and to describe briefly the conclusions to which they lead.

Before proceeding with the results of the fractionation experiments, a few fundamental characteristics of cupriamine solutions of cellulose have to be considered.

Cupriamine Solutions of Cellulose

Cuprammonium and cupriethylenediamine solutions are much better solvents for cellulose than the strong alkalies. However, these solutions contain a strong base, assumed to be tetrammine cupric hydroxide, and their action on cellulose could be ascribed to this strong basic character if it were not for the fact that the dissolution of cellulose in these solutions suggest a mechanism that is fundamentally different from that of other strong bases.

The interaction of cellulose and the cupriamine bases is best explained by the theories of Traube *(11)* and Hess *(3, 5)*:

> The cellulose forms a complex polyanion with copper, and this reaction is responsible for the dissolution of the cellulose. The solvent power of the cupriamine solutions, as well as their swelling power, increase with increasing copper content.
>
> Cuprammonium and cupriethylenediamine solutions, however, seem to have quite different fundamental properties. For example, the dilution of a solution of cellulose in cupriethylenediamine does not cause precipitation of the cellulose, whereas an excess of ethylenediamine results in its complete precipitation. On the other hand, the cuprammonium solvent cannot hold cellulose in solution if diluted with large volumes of water; but the presence of an excess of ammonia increases, rather than decreases, the solvent power of these solutions.

A plausible explanation of these facts is given in the following:

Cupriethylenediamine solutions were shown previously *(10)* to contain ethylenediamine and copper in the exact molar ratio of 2:1, represented by the formula $CuEn_2(OH)_2$. The active cuprammonium ion is usually represented by $[Cu(NH)_3]^{++}$. It is well-known, however, that the molar ratio of ammonia to copper, in cuprammonium solutions saturated with copper, is far in excess of the simple formula given above. Hence, the difference observed in the dilution effects could be accounted for rather well by assuming a difference in the bonding of the amine and ammonia in the respective complexes, water being able to displace ammonia molecules but not the more strongly bound diamine molecule in the complex.

The existence of the two ions, $[CuEn_2 \cdot (H_2O)_2]^{++}$ and $[Cu(NH_3)_4 \cdot (NH_3)_x]^{++}$, have been postulated and are apparently present in the two normal complex solvents.

According to Traube, when cellulose is dissolved in cupriamine solutions, saturated with copper, a certain amount of the amine is set free; more copper can then be put into solution, and consequently, an additional amount of cellulose can be dissolved.

An exact formulation of the equilibrium relationships of cuprammonium solutions, in the presence of cellulose, involves many difficulties, whereas the substitution of ethylenediamine for ammonia simplifies the problem considerably.

Traube concluded from his many studies, which he extended to cupriamine solutions of the simpler polyhydric alcohols analogous to cellulose, that the interaction of cellulose with cupriethylenediamine is expressed by the following equations:

---

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y. Feb. 16-19, 1942.

Contribution from the Research Laboratories of the Ecusta Paper Corporation, Pisgah Forest, N. C.

[1] Member TAPPI, Director of Research, Ecusta Paper Corp., Pisgah Forest, N. C.

[2] Member TAPPI, Chief Research Chemist, Ecusta Paper Corporation, Pisgah Forest, N. C.

$$2C_6H_{10}O_5 + CuEn_2(OH)_2 \leftrightarrows \underbrace{[C_6H_9O_5]_2\,[CuEn_2]}_{\text{insoluble salt}} + 2H_2O \quad (1)$$

$$[C_6H_9O_5]_2\,[CuEn_2] + CuEn_2(OH)_2 \rightleftarrows [(C_6H_9O_5)_2Cu]\,[CuEn_2] + \underset{2En + 2H_2O}{} \quad (2)$$

If the dissolution of the cellulose takes place in the presence of solid cupric hydroxide, the free amine liberated (Equation 2) is responsible for the dissolution of the so-called "secondary copper", with the formation of an addtional amount of the base $CuEn_2(OH)_2$. This is shown by the Equation 3.

$$[C_6H_9O_5]_2\,[CuEn_2] + CuEn_2(OH)_2 + Cu(OH)_2 \rightarrow [(C_6H_9O_5)_2Cu]\,[CuEn_2] + CuEn_2(OH)_2 + 2H_2O \quad (3)$$

The above equations show the necessary conditions for dissolution of cellulose in cupriethylenediamine solutions. The reverse effect, namely, precipitation, can be accomplished by the addition of an excess of ethylenediamine or of sulphuric acid.

If an excess of ethylenediamine is added to the cellulose—cupriamine solution, the electrical conductivity of the solution increases very rapidly (Fig. 1), even though ethylenediamine itself is a weak base with a low conductivity. Equation 2 satisfactorily explains this phenomenon—i.e., there is an equilibrium shift from right to left with the formation of the strong base $CuEn_2(OH)_2$ and precipitation of the insoluble cellulose complex salt according to the law of mass action. This salt is further decomposed by the action of water (Equation 1) to give cellulose and cupriethylenediamine. The retardation of cellulose dissolution by an excess of the amine is explained by the above.

An electrometric titration of the cupriethylenediamine solution in the absence of cellulose gives a curve similar to Fig. 1. The large increase in the conductivity of the solution when ethylenediamine is added is due to the formation of more highly ionized components.

A satisfactory explanation of the above can be based on a theory formulated by Jolley *(6)*, which considers the cupriethylenediamine complex to be represented by the following equilibrium:

$$[CuEn_2](OH)_2 \rightleftarrows [CuEn(OH)_2] + En \quad (4)$$

The evidence presented seems to confirm his assumptions.

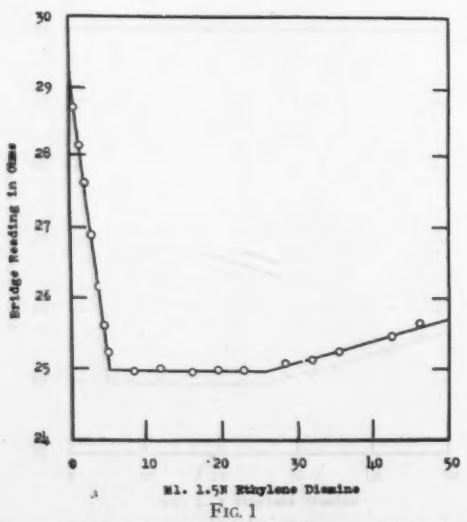


FIG. 1

Conductometric Titration of Cupriethylenediamine (0.5*N*) with 1.5*N* Ethylenediamine

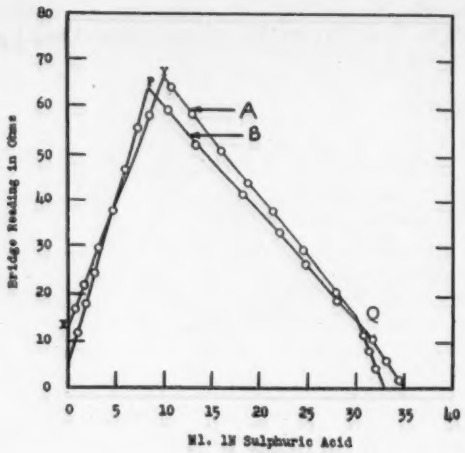


FIG. 2

Conductometric Titration of Cellulose-Cupriethylenediamine Solutions. Curve A—0.2 Mole Cellulose, 0.5 Mole Cu, 1.0 Mole En Per Liter. Curve B—0.2 Mole Cellulose, 0.5 Mole Cu, 1.0 Mole En Per Liter Dissolved in Presence of Excess $Cu(OH)_2$

Sulphuric acid gives the same type of an electrometric titration curve when an aqueous solution of cupriethylenediamine is neutralized in the presence or absence of cellulose. The respective curves obtained in the absence of cellulose have been reported by the authors in a previous communication *(10)*.

The precipitation of dissolved cellulose, as such, by the addition of sulphuric acid first commences when the free base $CuEn_2(OH)_2$ has been converted to the sulphate $CuEn_2SO_4$, and is complete when the part bound in the complex has also been converted to the sulphate. (First inflexion point, Curve A, Fig. 2.) This fact seems to be in a certain disagreement with Equation 2. A second break in the curve should be expected because the cellulose complex has a comparatively small degree of ionization, as is usually the case with such complex salts, and the complex hydroxide $CuEn_2(OH)_2$ is a very strong base with a very much higher degree of ionization. However, what actually occurs in this case is a shift of the equilibrium similar to that shown when an excess of ethylenediamine is added to the cellulose-copper-amine solution. The sulphuric acid, therefore, functions as follows:

$$[(C_6H_9O_5)_2Cu]\,[CuEn_2] + 2En + XCuEn_2(OH)_2 + (X + 3)H_2SO_4 \rightarrow (X + 2)CuEn_2SO_4 + 2XH_2O + 2C_6H_{10}O_5 \quad (5)$$

where X = excess.

The above reaction represents the first break in the curve (Curve A, Fig. 2). The second break is given by

$$(X + 2)CuEn_2SO_4 + 2(X + 2)H_2SO_4 \rightarrow (X + 2)CuSO_4 + \underset{2(X + 2)EnH_2SO_4}{} \quad (6)$$

If, however, the cellulose is dissolved in the presence of solid cupric hydroxide, it becomes possible to estimate the free base and the cellulose complex separately by a conductometric titration. The system is represented by the foregoing Equation 3 and the reaction taking place with sulphuric acid is represented by the following:

$$[(C_6H_9O_5)_2Cu]\,[CuEn_2] + CuEn_2(OH)_2 + XCuEn_2(OH)_2 + (X + 1)H_2SO_4 \rightarrow [(C_6H_9O_5)_2Cu]\,[CuEn_2] + (X + 1)CuEn_2SO_4 + \underset{2(X + 1)H_2O}{} \quad (7)$$

(First inflexion point, Curve B, Fig. 2.)

$$[(C_6H_9O_5)_2Cu]\,[CuEn_2] + (X + 1)CuEn_2SO_4 + (2X + 6)H_2SO_4 \rightarrow \underset{2C_6H_{10}O_5 + (X + 3)CuSO_4 + (2X + 4)EnH_2SO_4}{} \quad (8)$$

(Second inflexion point, Curve B, Fig. 2)

There exists no equilibrium in this case, and con-

sequently, no shifting of an equilibrium is possible since no free ethylene is present, and the removal of the copper atom from the cellulose complex, resulting in precipitation of the cellulose, is only possible by the direct action of the acid.

Fractional Precipitation of Cellulose from Its Solutions in Cupriethylenediamine

The foregoing discussion can be further illustrated by the curves given in Fig. 2.

Curve A represents the conductometric titration of a 0.5*M* cupriethylenediamine solution containing 0.2 mole of cellulose (approximately 3%). Curve B represents almost similar conditions; the only difference lies in the fact that the cellulose was dissolved in the presence of solid cupric hydroxide, the excess of which had been filtered off. This difference includes a further consequence, not immediately apparent which is important with regard to the precipitation of cellulose from these solutions.

In the former case, the cellulose is pricipitated along the line $\overline{X\,Y}$. This pricipitation begins when a point on the abscissa equivalent to the point *P* is reached, and is complete at the point *Y* (first inflexion point). In the case of the latter, the cellulose starts to precipitate at the point *P* on Curve B, and is complete at the point *Q*.

The amount of sulphuric acid required to precipitate the cellulose in the first case amounts to approximately 12 cc.; whereas, in the second case, approximately 24 cc. are required to precipitate the same quantity of cellulose from a solution containing the same amount of the amine but containing a greater amount of copper, which is due to the so-called "secondary" dissolved copper. The relative influence on the resolving power of these two types of solutions can be readily appreciated; and it is by utilizing the favorable conditions offered by the effect of the "secondary copper" that a successful fractionation can be carried out. Precipitation with sulphuric acid is definitely superior, for this purpose, to the use of ethylenediamine, as can be noted from a comparison of Figs. 1 and 2.

Cuprammonium solutions of cellulose show, in principle, a similar type of equilibrium; but because of the high ratio of ammonia to copper in the complex, the effects as discussed for cupriethylenediamine are masked, resulting in a relatively low resolving power. Although cuprammonium solutions are excellent cellulose solvents, this situation together with their low stability makes them unsatisfactory for a direct cellulose fractionation. High polymeric substances, as is generally acknowledged, can be fractionated by the method of "fractionated solution" or "fractionated precipitation" as long as physical solubility is involved exclusively. This assumption becomes less self-evident when the systems undergo formation and decomposition of definite salts or complexes, as is the case with solutions of cellulose in sodium hydroxide, Triton F, and the cupriamine bases. Therefore, it is necessary to prove that the partial precipitation of cellulose, as outlined previously, gives a true molecular fractionation. The experiments did, however, confirm this to be the case: cellulose of high viscosity is precipitated first, and the viscosity of this cellulose decreases with continued precipitation. We are obliged to conclude that the stability of the cellulose complex, in the presence of sulphuric acid, varies with the chain length of the cellulose molecules.

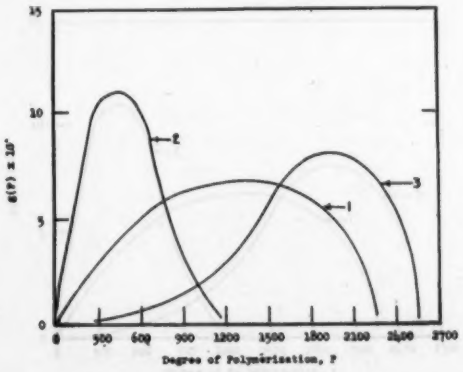


FIG. 3

Differential Weight Distribution Curves. Curve 1—Purified Minnesota Flax Fiber. Curve 2—Hypochlorite Degraded Minnesota Flax Pulp. Curve 3—Degreased Cotton

Results of Fractionation Experiments

Tables I, II and III give the values obtained as a direct result of the fractionation experiments. It may be noted that the polymerization degree of the original sample compares very favorably with the average sum of all the fractions, which indicates that no molecular break-down occurs during the fractionation.

TABLE I.—FRACTIONATION OF COTTON CELLULOSE
(Average degree of polymerization, P_w = 1725)

Fraction, %	Viscosity (0.5% solution) centipoises	Intrinsic Viscosity	Degree of Polymerization
8.0	48.50	9.60	2500
23.0	32.81	8.45	2200
24.0	19.10	6.92	1800
21.5	12.28	5.78	1500
14.0	8.24	4.85	1260
8.0	5.45	3.76	980
1.5	2.97	2.30	600

TABLE II.—FRACTIONATION OF PURIFIED FLAX CELLULOSE
(Average degree of polymerization, P_w = 1325)

Fraction, %	Viscosity (0.5% solution) centipoises	Intrinsic Viscosity	Degree of Polymerization
2.0	28.59	8.10	2100
14.5	26.20	7.90	2060
24.0	13.98	6.30	1640
20.5	9.20	5.08	1320
17.5	6.12	4.00	1040
12.5	3.88	2.92	760
6.0	2.54	1.90	500
3.0	2.04	1.15	300

TABLE III.—FRACTIONATION OF HYPOCHLORITE DEGRADED FLAX CELLULOSE
(Average degree of polymerization, P_w = 840)

Fraction, %	Viscosity (0.5% solution) centipoises	Intrinsic Viscosity	Degree of Polymerization
6.5	8.99	5.00	1300
18.5	7.21	4.45	1160
20.0	5.56	3.85	1000
20.0	4.15	3.10	800
22.5	2.96	2.30	600
11.5	2.17	1.54	400
1.0	1.60	0.77	200

The results of the fractionation experiments are further recorded as the weight distribution function plotted against the polymerization degree, using the nomenclature and method of plotting as given by Mark *(8)*.

The differential weight distribution curves given in Fig. 3 represent the results obtained by a fractionation of a lightly bleached native cotton (97.3% alpha-cellulose); a purified Minnesota flax pulp (soda pulp, 88.5% alpha-cellulose); and this same flax pulp after a strong hypochlorite bleach (40% available chlorine for 2 hours, alpha-cellulose 62%). The effect of the strong hypochlorite bleach on the distribution curves is quite evident and in full agreement with observa-

tions made by other investigators. The fractionation of the bleached pulp resulted in a curve which differs appreciably from the original pulp due to degradation by oxidation.

The foregoing experiments, although of a preliminary character, seem to prove that a direct fractionation of cellulose can be satisfactorily accomplished by this method. We are not aware of any great experimental difficulties which would prevent the preparation of large amounts of the individual fractions, allowing refractionation and resulting in celluloses of a limited range of polymerization degree.

From a theoretical standpoint it should be considered that the variation in complex stability, which causes fractional precipitation, should also become evident during the formation of the complex, with the possibility of obtaining a molecular fractionation due to differences in solubility. The method of fractionated solution, however, cannot be applied to cellulose directly, because of the steepness of the solubility curves obtained in the various well-known cellulose solvents. This method gives only partial information as to the form of the distribution curves, due to the low resolving power, not readily allowing their completion at the high polymerization degrees.

Experimental

Solutions of cellulose in 0.5*M* cupriethylenediamine were prepared according to the directions given in a previous paper *(10)*, excepting that the cellulose was dissolved in the presence of an 80% excess of solid cupric hydroxide. The solid was filtered off at the completion of the dissolving period. The initial concentration of all the cellulose solutions used was held at 1%, since the resolving power was comparatively high at this concentration.

The fractionation experiments were started with 100 cc. of a solution containing one gram of cellulose. To precipitate the cellulose, 8*N* sulphuric acid was added by means of a buret graduated in 0.01 cc. units, and the solution was continuously stirred during the acid addition, the temperature being kept at 25 deg. C. Approximately 13 cc. of acid were required to precipitate the first fraction, and 3-4 cc. for all subsequent fractions. The mixture can then be centrifuged and the clear portion drawn off. The precipitated fraction is washed with distilled water in the centrifuge tube, and finally dried in a vacuum dessicator over sulphuric acid. An additional amount of sulphuric acid can then be added to obtain the second fraction which is treated in the same manner. This procedure was continued until the original cellulose had been divided into about eight fractions, and no further precipitation occurred by the addition of acid. The dried cellulose fractions were redissolved in 0.5*M* cupriethylenediamine and their viscosity determined. Following the viscosity determination, an aliquot of each solution was taken, and the cellulose was completely precipitated by the addition of sulphuric acid. The precipitated cellulose was washed in the centrifuge tube, and the amount of cellulose present was determined by a modified oxidation procedure. This method gave results which differed by about 0.2% on duplicate runs, and was run as follows:

The cellulose is first treated with 75 cc. of 75% sulphuric acid at 25 deg. C. for approximately 20 minutes. Five to 25 cc. of potassium dichromate (35 grams per liter), depending on the amount of cellulose present, are then added, and the mixture is heated to 180 deg. C. for 10 minutes. The mixture is cooled to 70 deg. C. and 50 cc. of distilled water added. The excess dichromate present is determined by an oxidation-reduction titration with 0.01*N* ferrous ammonium sulphate using a Leeds and Northrup potentiometer with calomel and platinum electrodes.

By knowing the amount of dichromate required for the oxidation, the quantity of cellulose present in the sample may be calculated, since 1 cc. of the potassium dichromate solution (35 grams per liter) will oxidize 5.20 mg. of cellulose. This value was determined by oxidizing samples (average of 8) of known cellulose content. Thus, the amount of cellulose in each fraction can be determined without resorting to a direct weighing procedure which involves a number of experimental difficulties. From the determined weights of the cellulose fractions and the measured viscosity values, the molecular weight and degree of polymerization can be calculated.

Viscosity and Molecular Weight of Cellulose

The method of Staudinger *(9)*, relating viscosity and molecular weight of high polymeric substances, has received considerable attention because of its simplicity. And although a number of investigators have cast some doubt on Staudinger's theories, the bulk of evidence presented seems to favor his conclusions.

Staudinger's equation may be written as follows:

$$\frac{\eta_{SP}}{C} = K_m M \qquad (9)$$

where η_{SP} = specific viscosity
C = concentration of the dissolved polymer
K_m = viscosity-molecular weight constant
M = molecular weight of the dissolved polymer.

This equation is applicable to linear polymers of known structure, and is based on the assumption that, in extremely dilute solutions of high polymers, a monodisperse phase of polymeric molecules exist without mutual interference. Complete proof as to the quantitative validity of this equation is still lacking, since no sufficiently accurate independent method of determining the average molecular weights of high polymers is available.

The equation,

$$\frac{\log \eta_R}{C} = \frac{M}{K_{cm}} \qquad (10)$$

derived from the Arrhenius relation *(1)*

$$\frac{\log \eta_R}{C} = K_c \qquad (11)$$

where η_R = relative viscosity has been used by Staudinger.

Hess and Sakurada *(4)* pointed out that at infinite dilution these equations are related as follows.

$$K_{cm} = \frac{2.3023}{K_m}$$

$$\frac{\eta_{SP}}{\log \eta_R} = 2.3023$$

Many investigators prefer to use Equation 10 since $\log \eta_R/C$ is constant over a wider concentration range.

Kraemer *(7)* proposed the *intrinsic* viscosity $[\eta]$, and defined it as

$$[\eta] = \left[\frac{\ln \eta_R}{C}\right]_{c \to 0} \qquad (12)$$

which is equivalent to Staudinger's expression in the form,

$$\left(\frac{\eta_{SP}}{C}\right)_{c \to o}$$

where C = concentration, grams solute per 100 cc. of solution.

The difficulty in the use of all these equations is due to the fact that exceedingly dilute solutions of known properties are not easily obtained. It is for this reason that the experiments are usually conducted at higher concentrations and interpolated to the range of the dilute solution.

If we consider the equation of Farrow and Neale *(2)*, recommended for interpolating viscosity of cuprammonium solutions at various concentrations, we can avoid some of the difficulties encountered in the use of the viscosity-molecular weight relationships. Their equation can be written as

$$1 + a/C = b/\log \eta_R \qquad (13)$$

where C = concentration, grams solute per 100 cc. of solution
a and b = constants
η_R = relative viscosity

For cupriethylenediamine solutions of cellulose, it was found that if 1/c were plotted against $1/\log \eta_R$ a series of straight lines were formed by such a plot and resulted in an equation similar to Equation 13.

$$0.3 + \frac{1}{C} = S\left[\frac{1}{\log \eta_R} - 0.005\right] \qquad (14)$$

where S = slope of the line
$\eta_R = \frac{\eta}{\eta_0}$ (relative viscosity)
η_0 = 1.11 centipoises at 25 deg. C.

The linearity of these curves was realized experimentally between concentrations of 3 to 0.005%.

Rewritten Equation 14 in the form

$$\frac{\log \eta_R}{C} = \frac{S}{1 + 0.3C + 0.005\,SC} \qquad (15)$$

and taking the limit as C approaches zero, we find

$$\left[\frac{\log \eta_R}{C}\right]_{c \to o} = S \qquad (16)$$

Therefore, we have a convenient method whereby the intrinsic viscosity may be determined, thus

$$\eta = 2.3023\ S \qquad (17)$$

Hence, by determining the viscosity at any convenient concentration, we can readily find the value of the intrinsic viscosity.

Kraemer has shown from ultracentrifuge experiments that the intrinsic viscosity is related to the degree of polymerization, and he gives these relationships for cellulose in cuprammonium solutions as follows:

$$\frac{D.P.}{\eta} = 260 \qquad (18)$$

and

D.P. × 162 = M

where D.P. = degree of polymerization

The effects of various solvents on the intrinsic viscosity of cellulose derivatives has been shown by Kraemer to give constant values, indicating definitely that these solvents disperse the derivatives to the single molecule. Since cuprammonium and cupriethylenediamine solutions are known to disperse cellulose to the same degree, the value of 260 η can be used for the determination of the degree of polymerization of the dissolved cellulose, the value of η being determined as outlined above.

More work is needed to obtain a sufficiently accurate method of estimating molecular weights, independent of viscosity or osmotic pressure measurements. The ultracentrifuge method given by Kraemer seems to show greatest promise in this regard.

Literature Cited

1. Arrhenius, S., *Z. Phys. Chem.* 1:285 (1887).
2. Farrow, F. D., and Neale, S. M., *Shirley Inst. Memoirs* 3:67-82 (1924).
3. Hess, K., and Messmer, M., *Ann.* 435:1 (1924).
4. Hess, K., and Sakurada, I., *Ber.* 64:1183 (1931).
5. Hess, K., and Trogus, R., *Z. Phys. Chem.* 145A:401 (1929).
6. Jolley, L. T., *J. Textile Inst.* 30:122-141 (1939).
7. Kraemer, E. O., *Ind. Eng. Chem.* 30:1200-1204 (1938).
8. Mark, H., *Paper Trade J.* 113, no. 3:34-40, (July 17, 1941).
9. Staudinger, H., "Die Hochmolekularen Organischen Verbindung Berlin, Julius Springer, 1932.
10. Straus, F. L., and Levy, R. M., *Paper Trade J.* 114, no. 3:31-34 (Jan. 15, 1942).
11. Traube, W., *Ber.* 44:3319-3324 (1911); 54:3220 (1921); 55:1899 (1922); *Cell. Chem.* 11:249 (1930).

Ohio TAPPI Elects Officers

The Ohio Section of the Technical Association of the Pulp and Paper Industry held its annual meeting for the election of officers at the Manchester Hotel, Middletown, Ohio, on April 23, 1942. Following a dinner, Chairman Harry C. Fisher conducted the business portion of the meeting.

The Nominating Committee, consisting of Homer H. Latimer, Les Currier, John E. Burdsall, Edward Lum, and Colin Gardner III, presented the following slate of officers: Chairman: Carl D. Roess, Wrenn Paper Company; Vice-Chairman: Val Friedrich, Beckett Paper Company; Secretary-Treasurer: Duncan S. Brown, Gardner-Richardson Company; Executive Committee: Howard Harrison, Crystal Tissue Company; Harry Fisher, Gardner-Richardson Company; O. P. Gephart, Miamisburg Paper Company; George H. Harvey, Gardner-Richardson Company; Ralph Roe, Sorg Paper Company.

Following a motion by W. W. Macklem of Black-Clawson Company, seconded by Charles R. Merriman of Gardner-Richardson Company, the Secretary cast a single ballot electing the nominees.

Chairman Fisher then appointed an Auditing Committee composed of Edward Lum, Beckett Paper Company; Howard Buechler, Black-Clawson Company, and Myron Wittman of Cheney Pulp and Paper Company. In concluding the business session, Mr. Fisher expressed his thanks to members and officers.

The speaker of the evening was Dr. Glenn C. Kimble, Research Assistant of The Gardner-Richardson Company. He discussed "Optical Studies of Pulping Operations." In his talk he discussed the determination and application of color measurements of kraft and sulphite cooking liquors for the purpose of studying the constituents of the liquors and for controlling the cooking operations.

Among those present were: T. Agronin, C. Ray Boggs, Duncan S. Brown, Howard Buechler, John E. Burdsall, Harry A. Cunningham, C. R. Faulkender, Harry C. Fisher, O. P. Gephart, Harry E. Hadley, S. A. Hluchan, Glenn C. Kimble, Homer H. Latimer, Edward Lum, W. W. Macklem, Charles R. Merriman, Carl D. Roess, Andrew Ryfun, L. L. Slabkowicz, R. H. G. Smith, Edgar Turnbull, Samuel T. Weber and Myron Wittmer.

Kalamazoo TAPPI to Meet

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry will meet at the Park-American Hotel, Kalamazoo, Mich., at 6:30 P.M., May 7, 1942. Fred A. Weymouth of the International Printing Ink Company will present a paper entitled "Testing Paper Printability."

Trends in Combustion Control*

By M. J. Boho[1]

Abstract

A boiler plant is a machine for releasing the chemical energy in coal or other fuel and transferring it into steam at the desired pressure and temperature. Since steam demand is not constant but varies within limits, it is necessary that the rate of heat liberation within the boiler furnace be constantly adjusted to keep pace with steam demand. Since fuel and air both cost money, it is necessary that they be supplied as required for maximum economy.

A number of years ago, 150-pound steam pressure was the accepted standard and a typical boiler plant contained a multiplicity of small boilers. Today, however, pressures are higher, boiler units larger in size and smaller in number. In addition to imposing a higher order of reliability on all auxiliary equipment, including combustion control, this trend in design has made radical changes in the operating characteristics of the boiler units themselves. Reduced water volumes and higher steam pressures have minimized the accumulator effect of a modern boiler and, for satisfactory operation, it is necessary that load demands be followed almost instantly by corresponding changes in rate of firing. This calls for control equipment which is sensitive, fast, and stable, and in addition requires that the auxiliary elements under control be of a type that can follow the signals of the control system with little lag.

One of the principles of regulation is that a quantity must be measurable before it can be controlled. Some of the modern boiler designs with divided superheaters, economizers, and certain types of air heaters, make it extremely difficult to measure airflow to the unit accurately and various expedients must be resorted to in order to permit accurate regulation.

If a proposed design is scrutinized carefully as to its controllability before it is built, many headaches and operating difficulties can be forestalled.

The modern boiler plant, whether it be large or small, contains a few pieces of equipment that are absolutely necessary to the generation of steam, and a number of others that are not necessary but which are desirable in varying degrees. An engineer need not be an old-timer to remember clearly boiler plants consisting of nothing but boilers, feed pumps, chimneys, and coal scoops, and it cannot be denied that these plants generated steam. It probably can be argued therefore that all other boiler plant equipment is unnecessary.

An Important Engineering Problem

There is probably no engineering problem which has received more concentrated attention in the past twenty-five years than that of reducing the cost of steam. The result has been the development of various devices for economizing in fuel and labor. Some of these devices have achieved temporary popularity only to be replaced by others as the art developed. The fact that combustion control equipment has steadily gained in use is evidence that it made a real contribution to economy in steam generation. *Why* this should be true is obscure unless one is familiar with the problems of boiler operation.

Mill Manager's Problem

A boiler plant is a machine for releasing the chemical energy in coal or other fuel and transferring it into steam at the desired pressure and temperature. Since, in the modern paper mill, the demand for steam is not steady but varies within limits, it is necessary that the rate of heat liberation within the boiler furnace be constantly adjusted to keep pace with the steam demand. The elements entering into the combustion process are fuel and air. Fuel costs money while air is generally supposed to be free; however, this is far from the truth. The modern boiler producing say 150,000 pounds of steam per hour may require as much as 6¼ tons of coal per hour which, for its combustion, normally takes 87½ tons of air per hour—a volume of air included in a space as large as a football field and 150 feet high. The physical work of forcing this air through the boiler and out the stack is considerable and could be appreciated if it had to be done with a fan by hand.

An Additional Factor

In addition to this physical work, another factor must be considered. The air entering our boiler house may be at 60 deg. F. Due to the economic impracticability of extracting all of the heat resulting from combustion, the bulk of the air drawn into the boiler plant will escape out of the stack at a temperature of, let us say 500 deg. F. The loss of heat here is tremendous and, from the point of view of steam generation, it does the plant owner not one iota of good. If it were possible to extract this heat perfectly from the escaping flue gases, the coal purchased might have provided 15,000 pounds more steam per hour. It can be appreciated that as more air passes up the stack, *the loss becomes greater.* If the amount of air passing out through the boiler were reduced by slowing down the forced draft fan or reducing the opening of the stack damper, we would in turn reduce this quantity of gas and its resulting stack loss with the possibility that instead of 6¼ tons of coal per hour required to produce 150,000 pounds of steam, we might require slightly less. However, if we continued to reduce the quantity of air supplied, we would soon reach a minimum value and the quantity of coal required per hour would begin to rise, much faster in fact than might be expected. The reason is that the carbon, which is the major heat producing element in all commercial fuels, is not completely consumed.

One pound of carbon to be completely burned requires 150 cu. ft. of air. The heat liberated is 14,540 B.t.u., and the theoretical temperature developed is about 4200 deg. F. If instead of 150 cu. ft. of air, only 75 cu. ft. were supplied, the carbon would be partially burned and only 4380 B.t.u. or about 30%

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Engineer, Hagan Corporation, Pittsburgh, Pa.

of that possible would develop. The theoretical temperature then would be only about 2500 deg. F. If in the boiler furnace, we were to burn the carbon in the coal with only half enough air, the amount of coal required to generate 150,000 pounds of steam might be 21 tons per hour instead of 6¼. In view of this, it behooves the power plant engineer to supply as much as is required to furn the fuel completely and still not too much in excess as to increase the loss in the waste gases excessively.

Air Supply and Air Sufficiency

Figure 1 shows how delicate this balance is and indicates the effect on boiler efficiency of variations in the quantity of air supplied. The point of optimum operation is quite narrow indeed. On the basis of a coal cost of $4.50 per ton in the bunker, 10% more air than the optimum value would increase the cost of steam $10.00 per day. If 10% less air were supplied, the coal cost would have increased to $26.50 per day. The desirability of operating with the optimum amount of air is obvious.

To appreciate the difficulty, the boiler operator would have to manually control the air flow so as to operate at the top of the characteristic curve without sliding off one side or the other, let us see what would be required. Before the operator can control, he must first be able to measure. Coal or oil could be measured in pounds or gallons and the operator, given some indication, might know just how much fuel he is using from minute to minute. Since air is imponderable, some indication such as the pressure loss across an orifice, or across a selected section of the boiler, must be used as an indication of the amount of air supplied. Suppose in addition to these indicators of fuel and air flow, he had convenient levers to adjust the respective rates of flow. Given now a chart of the relative values of fuel and air required to maintain operation at the top of our characteristic fuel-air ratio curve, the operator would be ready to go to work. If the load on the boiler were reasonably steady, he might be able to keep within several per cent of the desired point; however, if just as he had conditions set right, a change in load occurred, he immediately would be required to readjust his fuel rate and, in order to maintain the desired fuel-air ratio, also the rate of air flow. If now, just before he were able to set conditions correctly this time, still another load change occurred, and soon after another, it is apparent that he would be in a predicament indeed.

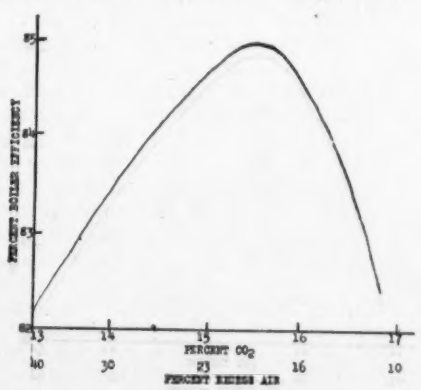


FIG. 1
Boiler Efficiency versus Excess Air Characteristics

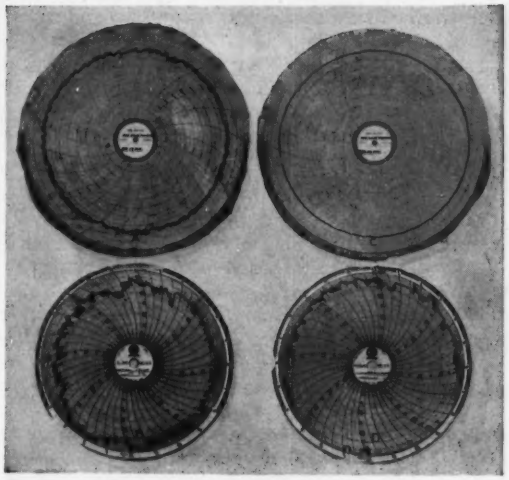


FIG. 2
Typical Charts Under Manual and Automatic Control

The usual result would be that he would soon lose interest in fuel-air ratio maintenance and concentrate only on the problem of maintaining steam pressure. The cost of steam generation would immediately start soaring, depending on how far the fuel-air ratio departed from standard. If it is thought that the job of maintaining steam pressure and fuel-air ratio at the same time by hand is not a problem, consider driving your automobile at 25 miles per hour just exactly 20 feet behind another car, regulating the gas throttle so as to maintain the same distance between at all times. On the open highway, it might not be much of a job, but in town traffic, with the man ahead constantly slowing down and speeding up, and even stopping at times, it is extremely difficult. It illustrates with what the power plant engineer and the boiler operator must contend under hand control. The rate of steam generation is not set by him but by the steam using apparatus in the mill, just as in our hypothetical example above, speed is set by the man ahead. If the speed of the cars in the example were moved up to 60 miles per hour, we can appreciate how delicate control of the car would have to be to maintain the distance between at the desired 20 feet, especially if the speed were continuously being changed. The problem, however, is analagous to that of the power plant engineer and the boiler operator maintaining fuel-air ratio and steam pressure under hand control. With automatic control, however, it is possible to regulate rate of firing so that only the exact amount of fuel required is supplied the boiler furnace at all times, assuring thereby a much more even steam pressure line than possible to obtain by hand, and in addition automatically insures operation with the optimum amount of air.

Hand and Automatic Control

Figure 2 shows the difference between hand control and automatic. The charts reproduced were taken from a New York paper mill boiler plant with four 250 hp. Walsh-Wiedner boilers operating at 400 p.s.i., fired by chain-grate stokers and using anthracite coal. The Chart A at the upper left, made in 1938, shows steam pressure under manual control, while Chart B immediately below shows total plant load. Chart C at the top right, made in

1941, shows main steam-header pressure under automatic control, while Chart D below shows the total plant load. The steam chart shows a variation of approximately 45 p.s.i. or more than 10% under hand control, while under automatic control, these variations are reduced to less than 10 p.s.i. over-all.

Comparing the Two Methods

Comparing the two methods of operation. The pressure maintained in the header under automatic control was held at 400 p.s.i. (the designed operating pressure). Under hand control, the pressure is nearer 380 p.s.i., purposely carried lower by the operators probably to keep the safety valve from blowing on sudden reduction in load as might occur if the fireman were not on his toes every minute. The 20 p.s.i. added steam pressure under automatic control provides a considerable increase in available energy per pound of steam at the throttle of the process turbine. As a result, more power can be generated from the same amount of steam with a corresponding decrease in the purchase of outside power. The advantage of operating right up to design pressure is obvious.

Inasmuch as steam pressure is maintained more constant, changes in firing-rate are required only in accordance with changes in steaming rate. Fuel-bed conditions are considerably better and the most desirable fuel-air ratio is held more closely. The resulting improvement in operation is given in Table I.

TABLE I.—MANUAL VERSUS AUTOMATIC CONTROL

	1938 Manual Control	1941 Automatic Control
Boiler Efficiency	74.5%	78.0%
Cost per 1000 pounds Steam	$0.2492	$0.2450
Coal Cost per Ton	$4.54	$4.67
Cost per 1000 pounds Steam Reduced to 1938 Fuel Cost Basis	$0.249	$0.238
Net Reduction		$0.011
Reduction		4.5%

FIG. 3
Heat in Liquid at Various Boiler Pressures

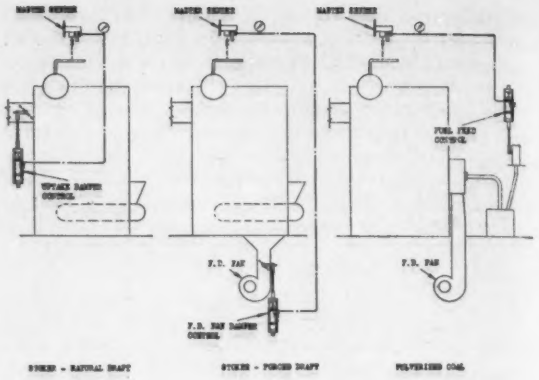


FIG. 4
Steam Pressure Control Elements

In the case of the plant in question, this saving represents a reduction of $10,000.00 per year in operating cost, largely due to automatic control in the boiler room. This saving pays for the control once every six months. In addition to the reductions in operating costs at the power house with automatic control, the supply of steam at constant pressure and temperature means more uniform operation of the digesters, driers, etc., with closer control of pulp, paper, and paperboard quality and more uniformity in the final product.

Automatic combustion control can be applied to almost any boiler house, existing or projected, using solid, liquid, or gaseous fuels. The only point to be kept in mind is that before a quantity can be controlled, it must first be measured. If measurement is available, the boiler can usually be controlled. Much grief can be avoided in the design of a projected boiler plant if it is scrutinized carefully to make sure that after it is built, it will lend itself easily to automatic regulation.

Plant Engineer's Problem

The control elements on any boiler unit can be divided into three parts as follows: (1) control of steam pressure, (2) control of fuel-air ratio, and (3) control of removal of products of combustion.

Control of steam pressure relatively is an easy problem to accomplish on a modern boiler if a fast stable control system is provided. Modern developments in boiler design, however, are making the problem more difficult than it has been in the past. The boiler plant of twenty-five years ago consisted of a multiplicity of boilers, each of relatively small capacity. Load changes of considerable extent were handled with little trouble and with small changes in steam pressure. Today, the modern pulp or paper mill boiler plant consists of relatively few boilers, each of a larger capacity than its predecessor, and, unless automatically controlled, may present a real problem to the operator to supply steam when and as needed without excessive changes in steam header pressure. In the older plant, a boiler pressure of 150 p.s.i. was the accepted standard and boilers contained two or more pounds of water per pound of steam produced hourly at maximum capacity. A load increase of from 50 to 100% of steaming capacity could be carried for one minute with no change in previous firing rate and with only a 10-pound drop

in steam pressure. Even manually-controlled boilers could handle this type of load without allowing steam pressure to depart too radically from the value desired in the header. Today, boiler manufacturers, in an effort to help companies reduce investment costs on boiler equipment, are designing boilers which can be pushed at higher and higher ratings. A boiler to produce 100,000 pounds of steam per hour today is much smaller than its early predecessor. Where the old boiler contained 2 pounds of water per pound of steam produced hourly, the modern unit may contain only 1/10 as much. An instantaneous increase of from 50 to 100% of capacity will drop the steam pressure from 150 to 140 p.s.i. in six seconds as compared with one minute in the case of its early counterpart. With such small margins to work on, load swings of this magnitude would call for energetic movements indeed on the part of the operators of present-day plants if manual control alone were employed.

Additional Factors

In addition to the trend towards reduced water volumes, the use of higher steam pressures likewise minimizes the accumulator effect of the modern boiler. Figure 3 shows the number of British thermal units in each pound of water in a boiler operating at various pressures. The rate of change is such that pressure must change 2 p.s.i. to release 1 B.t.u. from each pound of water in the boiler when operating at 150 p.s.i. At an operating pressure of 600 p.s.i., the rate of change is approximately 5 p.s.i. for 1 B.t.u. released per pound of water. This means that for the same sudden increase in load, the higher pressure boiler will be required to drop two and one-half times as far in steam pressure to flash the required increment of steam as the lower pressure unit.

In addition to these changes in design, the modern boiler unit usually includes water walls which may account for approximately 50% of the total heat absorbed in the entire unit. Since this is largely by radiation, it can be appreciated that changes in furnace temperature have a profound effect on steam pressure. The effect of all these changes in boiler design and operating pressures has clearly increased the difficulty of the boiler operator's task in maintaining steam pressure under varying load conditions and, unless automatically controlled, steam pressure cannot accurately be maintained.

Because the huge flywheel effect which the older

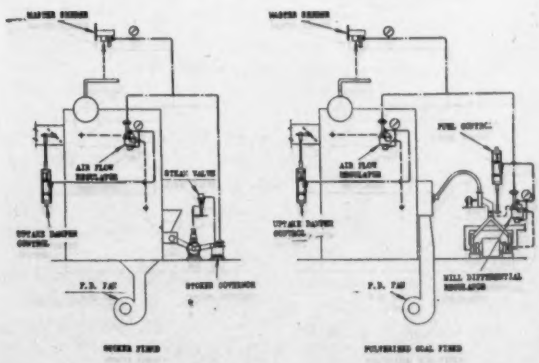


FIG. 5
Fuel-Air Ratio Control Elements

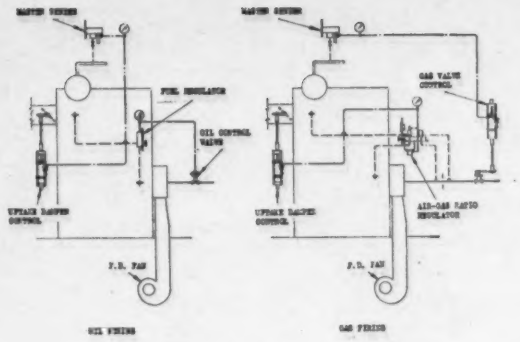


FIG. 6
Fuel-Air Ratio Control Elements

boiler had is no longer present, it is necessary today, if steam pressure is to be maintained, to follow the changes in load with instantaneous corresponding changes in firing rate. The absorption of heat by the present-day boiler can be considered as practically instantaneous because the time of passage of the gases of combustion is a matter only of seconds. The problem of regulation of steam pressure reduces itself to one of keeping up with changes in load demand by corresponding changes in firing rate. This requires control equipment which will instantly feel any changes in boiler load and make a corresponding correction as quickly as possible. It is necessary that changes in rate of fuel feed and air flow be made at the same time and in proper ratio if best combustion efficiency is to result. The problem of automatic operation then resolves itself into one of getting the fuel and air to the furnace as soon after the load change comes on as is possible. This requires fuel-firing equipment that incorporates little or no time lag from the instant that control calls for an increase in fuel until the additional fuel is actually supplied to the furnace. The draft equipment, likewise, must incorporate little delay. Turbine-driven fans, dampers, and various types of hydraulic and electrical transmission have suitable characteristics for this work. If fuel is fired on grates, such as on a stoker, the rate of burning is a function largely of the rate of air supplied, and control of steam pressure can be considered as being effected by the control elements which regulate directly the rate of air supply. When fuel is burned in suspension, the control of steam pressure can practically be considered as being effected by the regulation of fuel supply. Theoretically, of course, steam pressure is maintained by regulation of both fuel and air. Figure 4 shows several typical examples of the control items on a boiler which might be considered as effecting steam pressure control.

Measurement of Fuel and Air

Control of fuel-air ratio involves a measurement of both fuel and air. The accuracy with which ratio can be maintained is largely a function of the accuracy of the individual measurements. A number of years ago, the rate of air supply was capable of much more accurate measurement than was the fuel supply. Today, however, modern boiler and fuel-firing equipment designs are changing the picture so that the air flow is now much more difficult to meas-

ure accurately. The procedure in the past had been to measure the draft loss across the selected section of the boiler heating surface and calibrate this indication by simultaneous measurement of flue gas analysis and draft loss. In those days, the term "boiler horsepower" had some semblance of meaning. Today, however, with the increased use of water cooling, boiler horsepower means little. A modern boiler may consist of a water-cooled furnace, little or no boiler tubes, a superheater, and an air heater. For control of superheat, usually on the larger units, some form of superheater bypass arrangement is used which precludes the possibility of using the draft loss across the unit for measurement because the bypass damper is varied to control temperature. The air heater in many cases is of a type which cannot be used for measurement, leaving the control nothing from the furnace to the stack for use as measurement. In some cases, it has been possible to utilize burner pressure for air flow measurement but here, too, some burners require adjustment of burner dampers when ratings are reduced, thereby eliminating even this point as a means for air measurement. Whenever one of the new boiler designs are considered, the design should be scrutinized carefully to make sure that provision has been made for accurate measurement of air flow.

Given a means of measurement of fuel rate and air flow, the problem of fuel-air ratio control resolves itself into a calibration of the fuel and air controls at a number of points throughout the operating range of the boiler. Simultaneous readings of stoker, fuel flow or feeder speed, draft loss, orsat analyses, and physical appearance of the furnace and auxiliaries will establish the proper control operating characteristics.

In some cases, such as burning bark or recovery liquor, the fuel does not lend itself to ready measurement. In such cases, the rate of firing can be set by hand and the steam produced by the unit used as a measure of fuel supply and air flow regulated accordingly.

In other cases, where certain types of coal feeders are used with wet and dry coal alternately, the speed of the feeder is not a consistent and accurate indication of the rate of fuel flow. Where this is true, fuel-air ratio control is accomplished by coordinating

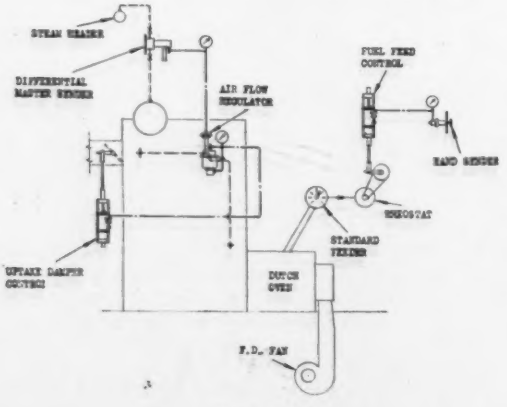


FIG. 7
Fuel-Air Ratio Control Elements

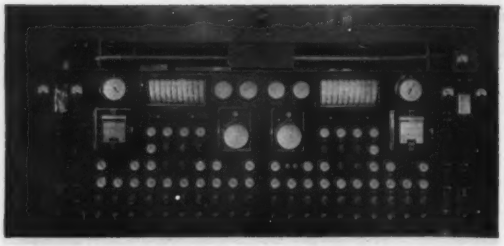


FIG. 8
Modern Central Station Boiler Unit—Powdered Coal Fired

steam pressure and steam flow to control air flow.

Whenever an accurate measure of both fuel and air is available, the preferable fuel-air ratio control consists of a parallel control on a measured basis of both fuel and air in accordance with impulses set up by the master sender. Figures 5, 6, and 7 show typical fuel-air ratio control elements.

Furnace Draft

The remaining item, that of control of furnace draft, can be accomplished either by control of induced draft or forced draft depending on which is used primarily for control of steam pressure and fuel-air ratio. On a stoker-fired installation, for example, the steam pressure control may adjust the induced draft, the furnace pressure control therefore will regulate the forced draft. If the master sender is installed to regulate the forced draft, the induced draft will be used to control the furnace draft. The scheme, where the furnace draft regulator controls the induced draft directly, is sometimes called a balanced draft system. The arrangement where the furnace draft is controlled by forced draft supply is called the compensated draft system. On a stoker-fired installation, the compensated draft is sometimes preferred because if a hole should develop in the fire, the forced draft will automatically be reduced. This in turn will tend to lower steam pressure, and the master sender will increase air flow and stoker speed until pressure is again stabilized. This sequence will result in the stoker speed being increased and the hole will soon be covered.

Where the fuels are burned in suspension, such as pulverized coal, some advantage for the balanced draft hookup is claimed by some in that soot blowing does not affect the quantity of air entering the furnace, especially if air flow is controlled by regulation of forced draft and measurement taken on the air side of the air heater.

The draft to be maintained in the furnace should be that closest to atmospheric, which will maintain all parts of the boiler under negative pressure to prevent escape of gases into the boiler room and remove danger of sparks injuring operators. Where boilers have high furnaces, the chimney effect of the hot gases may sometimes cause a positive pressure at the top of the setting; for example, while a considerable suction may exist at the bottom.

Furnace draft should not be carried any higher than actually necessary since air infiltration will take place through any leaks or openings in the setting, and the higher the draft the greater this leakage and the higher becomes the loss to the stack due to this infiltration of air.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of importers to this publication.

NEW YORK IMPORTS

WEEK ENDING APRIL 25, 1942

SUMMARY

Newsprint .....2,892 rolls
Drawing paper .....15 cs.
Filter paper .....15 cs.
Tissue paper .....63 cs.

NEWSPRINT

——, ——, ——, 1650 rolls.
——, ——, ——, 1242 rolls.

DRAWING PAPER

H. Reeve Angel & Co., Inc., ——, ——, 15 ds.

FILTER PAPER

H. Reeve Angel & Co., Inc., ——, ——, 15 cs.

TISSUE PAPER

G. F. Malcolm Co., ——, ——, 63 cs.

RAGS, BAGGINGS, ETC.

Hercules Powder Co., ——, ——, 97 bls. cotton motes.

GLUE STOCK, ETC.

Darmstadt Scott & Courtney, ——, ——, 300 bls. skin cuttings.
1st National Bank, ——, ——, 100 bags hide glue.
National City Bank, ——, ——, 100 bags skin glue.
——, ——, ——, 125 bls. glue stock.
Milligan & Higgins, ——, ——, 121 bls. glue stock.

CASEIN

——, ——, ——, 2001 bags, 120060 kilos.
National City Bank, ——, ——, 2085 bags, 124100 kilos.
——, ——, ——, 2706 bags, 150120 kilos.
Chemical Bank Trust Co., ——, ——, 1251 bags, 75060 kilos.
Bank of London & South America, ——, ——, 1417 bags, 75020 kilos.
Bank of The Manhattan Co., ——, ——, 417 bags, 25020 kilos.
Irving Trust Co., ——, ——, 2380 bags, 142800 kilos.

BONES

——, ——, ——, 16102 bags.

Hudson Falls Plant to Receive Navy "E" Award

The Sandy Hill Iron and Brass Works, the Hudson Falls War Plant that pays its help to attend church on Sunday, will receive the coveted Navy "E" pennant for excellence in War Production on May 8 at a formal ceremony on the company's grounds.

Though the guests of honor will include National, State and Naval dignitaries, the celebration is to be strictly a "Worker's Party" according to Navy officials who announced the event.

The Navy "E" is given in recognition of the offorts of both labor and management. With the navy blue pennant bearing the letter "E" that recipient firms may fly at their mastheads, there also go individual buttons to be worn by every qualifying worker in the plant.

Predominant factors in the selection of companies to receive the award are: 1. Production as compared with delivery schedules under the contract; 2. Ingenuity in methods of manufacture; 3. Valuable suggestions in design changes to permit more rapid fabrication; 4. Cooperation with personnel of the Navy Bureau concerned and 5. Satisfactory dealings with labor.

The Sandy Hill Iron and Brass Works has converted many of its facilities from the making of paper machinery and is now working for the Navy on Johnson Towing Machines, unique devices to prevent hausers from breaking in towing damaged ships. The plant is also making mine sweeping equipment and anti-aircraft gun mounts.

Machinery at the Hudson Falls plant runs seven 24-hour days each week. Men, however, work 56 hours, and those on the Sunday morning shift may go to church on company time.

Frank A. Juckett, president of the firm, in acknowledging the Navy honor gave recognition to the fact that the reward is meant for the loyal employees, "without whom such progress would have been impossible."

About a million men in industries are already wearing the Navy "E". It is in this way that the Navy rewards its champions ashore with the identical recognition given its champions afloat. The Navy "E" is awarded annually to the ship that achieves the highest rating in gunnery, engineering and general efficiency.

A letter from Navy Secretary Frank Knox to the employees of the Sandy Hill Iron and Brass Works reads as follows:

"It is a privilege for me to be able to advise you that the Navy Board for Production Awards has designated The Sandy Hill Iron and Brass Works as recipient of the Navy 'E' Award for production achievement.

"Since 1906 the 'E' has been the traditional Navy symbol for excellence—for a job 'Well Done.'

"This is an honor not lightly bestowed, and one to be cherished by you.

"As the Secretary of the Navy, and as a fellow American, I congratulate you upon the achievement of this honor. And in so doing, let me remind you that your company's contribution, together with that of other of our patriotic countrymen, is only the beginning! This production, increased manyfold must and will become the tide of victory!"

To Close Winchester Plant

WINCHESTER, Va., April 27, 1942—The local plant of the Eddy Paper Corporation, formerly the Shenandoah Boxboard plant, will be closed, effective May 1, according to C. R. Erbe, superintendent.

Mr. Erbe said he understood the closing order was issued because other Eddy plants were producing sufficient boxboard to meet demand. The local plant has produced an average of 44 tons per day and employed 80 persons.

New York Paper and Pulp Market Review

War Production Board's Chlorine Amendment Providing Relief To Mills Making Rag Paper Is Now In Effect—Roofing Rags Strong —Scrap Bagging Active — Demand For Waste Paper Moderate.

Office of the PAPER TRADE JOURNAL,
Wednesday, April 29, 1942.

Orders in the wholesale market for kraft, some grades of sulphite wrapping and for container board, continue to be reported at a high level. The peak of demand for paper and paper products in general, appears to have been reached some weeks ago. An easier supply situation excepting in kraft sack paper and container board, generally prevails. According to opinion expressed in several quarters, a substantial part of the consuming public is now making a more frugal use of paper.

The index of general business activity for the week ended April 18 rose to 132.6%, from 132.5% for the preceding week, compared with 118.6% for the corresponding week last year. Paper board production was fractionally higher.

Paper production for the week ended April 18 was estimated at 100.5%, compared with 94.0% for 1941 with 86.5% for 1940, with 82.7% for 1939, and with 67.4% for the corresponding week for 1938.

Paper board production for the week ended April 18 was 94.0%, compared with 78.0% for 1941, with 72.0% for 1940, with 69.0% for 1939, and with 64.0% for the corresponding week for 1938.

Consumer demand for book papers in the production of advertising literature, continues declining. Reports from many manufacturers' representatives, jobbers, and general paper merchants this week, reflect increasing difficulties and hardships, inevitably caused by the curtailment of normal business to further the progress of the war effort. Prices are stabilized and unchanged.

Wood Pulp

The OPA maximum prices now in effect also represent the Canadian manufacturers prices. The single exception at this date is the quotation of one leading Canadian mill of $64 per ton on unbleached softwood sulphite, formerly quoted as "news grade." Uniformity of prices prevail in all other grades of wood pulp.

The WPB has amended Order No. L-11, to provide some relief to some mills. Paper manufacturers are permitted by this amendment to use no greater amount of chlorine, in any calendar quarterly period, for the treatment of rag stock, than 80% of the average amount of chlorine per ton of rag stock, treated and used by such producer for the treatment of rag stock during the calendar quarterly period ending July 31, 1941. This order is now in effect.

Rags

Mill buying of roofing rags is reported as very good at this date. Demand for mixed rags is also steady. Prices are quite well maintained on all major grades of new and old rags.

Old Rope and Bagging

Demand for old No. 1 Manila rope continues steady, with mill buying taking about all available supplies. Other grades of rope, strings, threads are firm.

A strong demand for scrap bagging is reported in some quarters. No. 1 domestic gunny is also reported in a strong position, under a good demand, with supplies quite widely reported as none too plentiful at this date.

Old Waste Paper

Mill buying of many grades of paper stock is widely reported as moderate to good. Reports indicate that supplies of No. 1 mixed and other lower grades are sufficiently large to create a soft market in these grades. The higher grades of waste paper are quite firm, with mill buying at maximum OPA prices. Demand for old corrugated continues strong.

Twine

Demand is reported very good on some grades of twine. The supply situation on imported fibers is, of course, serious. The WPB has ordered that no Java sisal can now be used in the manufacture of twine for civilian use.

To Open Campaign for Russian Relief

Leading paper industry executives, Henry Nias of Lily Tulip Paper Cup Company, William Salzman of Brooklyn Standard Bag Company, and Isaac Stern of S & S Corrugated Paper Machinery Co., will be among sponsors of a testimonial dinner to be given Joseph E. Davies, former United States ambassador to the Soviet Union, and chairman of the President's Committee on War Relief Agencies, at the Commodore Hotel, Thursday, May 7 at 7 P.M.

The dinner will open a campaign by Russian War Relief, Inc., to raise $6,000,000 for medical and surgical aid for Russia. The affair will be formal and invitational.

Papermaker Wanted by N. B. S.

The National Bureau of Standards needs a papermaker to assist in the work of the paper mill of the paper section. The work involves the operation and maintenance of semi-commercial papermaking machinery which comprises all units required for conversion of raw material into paper, and for processing of papers such as supercalendering, coating, and surface sizing. Experience in the operation of a Fourdrinier paper machine is an essential requirement. Anyone interested in the position should communicate with the Bureau.

Opens Coast Offices

The Titanium Pigment Corporation in order to establish and maintain direct contact with its customers on the Pacific Coast on the same basis as in the East announces the opening of offices at 350 Townsend street, San Francisco, Calif., R. Lee Wharton in charge; and at 2472 Enterprise street, Los Angeles, Calif., E. G. Burling in charge.

USE THOSE REJECTS!

Bauer Double-Disc Pulper Saves Stock, Cuts H.P., Increases Quality

This is an actual case history: A prominent newsprint mill has been able to show that by grinding with 75 H.P. days per ton and getting about 4% in rejects, they could improve this situation, by making the following changes:

1) Production could be increased by coarser grinding with less power.

2) The rejects, now 8% instead of 4% could be defibered in a Bauer double-disc pulper and the product included in the main furnish.

Net result: reduction in H.P. from 75 to 57 H.P. days per ton, maintaining the same original stock quality.

How are such results possible? What other stocks can be profitably defibered by Bauer? The answers to these important questions await your letter or telephone call. The Bauer Bros. Co., Springfield, Ohio.

BAUER No. 185 DOUBLE-DISC PULPER.

THE BAUER BROS. CO. SPRINGFIELD, OHIO

Here's how to Step-up Production

Using Present Equipment!

FLOW CHART SULPHITE SYSTEM
ADD KEROSENE HERE AT THE RATE OF APPROXIMATELY 2-GAL. PER TON OF A. D. STOCK
BLOW PIT
KNOTTER
2 Easy Steps
RIFFLER
FINE SCREEN
ADD NOPCO 1216-V HERE AT THE RATE OF APPROXIMATELY ½-GAL. PER TON OF A. D. STOCK
THICKENER
PAPER MILL OR BLEACH PLANT
ABOVE SUGGESTED METHOD MAY BE VARIED TO MEET MILL CONDITIONS

NATIONAL OIL PRODUCTS CO.
HARRISON, NEW JERSEY

NOPCO

BRANCHES:
Boston • Cedartown, Ga.
Chicago • Los Angeles

Nopco's New Method of Pitch Control*

* U. S. Pat. No. 2144756
Canadian Pat. No. 390984

HERE'S one quick, sure answer to today's pressing demand for "Production, production and more production!"

Reduce or eliminate pitch accumulation and machine shutdowns for clean-ups! Get more production. Reduce time and labor costs! But you don't spend a single penny for additional equipment!

The new Nopco Method of Pitch Control as adapted by leading mills is simple, sure, easy.

Leading Mills Say Pitch Accumulation Disappears

The Nopco Method of Pitch Control is no untried, unproved experiment. On the contrary, it's now in use in a number of leading mills. They agree pitch accumulation can be reduced or eliminated in both the white water systems and in all parts of the operating machinery.

New free booklet "The Nopco Method of Pitch Control" just off the press gives full information, including prices, application data etc. Write or clip coupon for your copy. Better still, order enough immediately for trial run on approval.

CLIP THIS COUPON

National Oil Products Co.
Thomas St., Harrison, N. J.
Without obligation, send free booklet "The Nopco Method of Pitch Control."

Name.....

Company.....

Address.....

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, April 29, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported good for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are little changed for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 21 cents per pound; 80-100 mesh, at 21½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 16½ cents per pound, c.i.f. No quotations in French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported good. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Government demand is reported very heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices higher on some grades. "G" gum rosin is currently quoted at $2.86 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $2.78 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.24 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand good for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported good for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina. Demand reported active for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$6.00	@	$7.00
Superstandard	5.25	"	6.25
Northern Standard Wrapping	4.75	"	5.25
Standard Wrapping	4.75	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Lt. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$40.25	@ $47.25	$41.40	@ $48.50
100% Rag	32.20	" 37.75	33.35	" 39.25
85% Rag	....	"	32.20	" 37.75
75% Rag	24.75	" 29.00	25.90	" 30.50
65% Rag	....	"	22.80	" 27.75
50% Rag	18.70	" 22.75	19.90	" 24.25
25% Rag	16.40	" 20.00	17.55	" 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$10.55	@ $12.75	$11.70	@ $14.25
No. 2	9.65	" 11.75	10.80	" 13.25
No. 3	9.20	" 11.25	10.35	" 12.50
No. 4	8.90	" 10.75	10.05	" 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00		
Unbl. Softwood Sulphite	64.00	@	66.00
Bl. Hardwood Sulphite	73.50		
Unbl. Hardwood Sulphite	63.50		
Bl. Mitscherlich	81.00		
Unbl. Mitscherlich	72.00		
N. Bleached Sulphate	86.00		
S. Bleached Sulphate	79.00		
N. Semi-Bleached Sulphate	82.00		
S. Semi-Bleached Sulphate	75.00		
N. Unbl. Sulphate	73.00		
S. Unbl. Sulphate	63.50		
Bl. Soda	86.00		
Unbl. Soda	82.00		
Groundwood	46.00		

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50
	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.00

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.2
Silesias No. 1	4.50	"	4.7
New Unbleached	8.00	"	8.2
Blue Overall	5.75	"	6.0
Fancy	3.00	"	3.2
Washables	2.50	"	2.7
Mixed Khaki Cuttings	2.50	"	2.7
O. D. Khaki Cuttings	3.00	"	3.1

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—

* Old Manila Rope 5.75
*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.4
New Mixed Cuttings	2.00	"	2.2
New Light Silesias	5.50	"	5.7
Light Flannelettes	5.50	"	5.7
New White Cuttings	7.00	"	7.5
New Light Oxfords	4.00	"	4.5
New Light Prints	3.00	"	3.2

Old Rags

No. 1 White Linens	7.50	"	8.5
No. 2 White Linens	6.50	"	7.5
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	@	3.2
No. 1 White Cotton	4.25	"	4.7
No. 2 White Cotton	3.25	"	3.7
No. 3 White Cotton	2.50	"	3.0
No. 4 White Cotton	1.90	"	2.2
Extra Light Prints	2.00	"	2.4

DANDY ROLLS

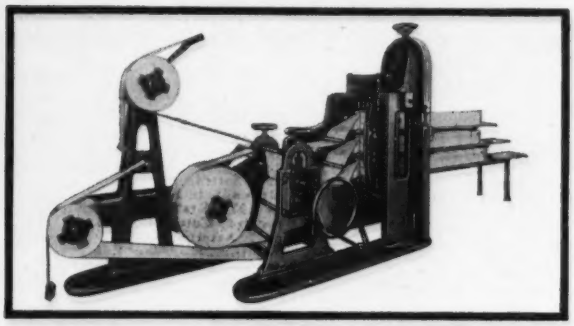
WATERMARKING
DANDY-ROLLS
WHITE OUTLINE MARKS
EMBOSSED MARKS
WOVE ROLLS
LAID ROLLS

★ LIGHTWEIGHT DANDY ROLLS ★
CIGARETTE TYPE DANDY ROLLS

"any width any diameter"

The SINCLAIR *Company*
HOLYOKE, MASS.

HIGH SPEED



NAPKIN FOLDER

It makes them all—plain, embossed and printed — quarter-fold, dispenser-fold, sixteenth-fold and eighth-fold. Folds 100,000 per hour — every napkin perfectly folded and delivered in a smooth, clean pack ready for wrapping. Used by every large producer of napkins in the United States and many foreign countries.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

INDUSTRIAL DEPARTMENT ★ SEABOARD AIR LINE RAILWAY
SHORT CUT to FACTS
Everyone knows the South possesses outstanding advantages for manufacturing. However, not all communities in the South offer equal advantages to industry. In the six Southeastern States served by the Seaboard, as elsewhere, a plant location is good or bad depending upon whether it meets the requirements of the enterprise.
WE KNOW THE GOOD PLANT LOCATIONS
For many years we have made a careful study of this territory, and accumulated a great amount of information on plant sites, natural resources and manufacturing conditions. To responsible clients we offer an experienced and competent plant location service without cost or obligation.
Ask us for detailed studies of suitable locations for your business in the Seaboard "Profit Zone". Address Warren T. White, General Industrial Agent, Seaboard Air Line Railway, Norfolk, Virginia.
SITES
LABOR
TRANSPORTATION
RAW MATERIALS
POWER
LIVING CONDITIONS
CLIMATE
TAXES
FREE!
INDUSTRIAL DEPARTMENT
SEABOARD
AIR LINE RAILWAY

Ord. Light Prints...	1.75	"	2.13
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.08	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light....	4.25	"	4.50
Wool Tares heavy..	4.50	"	4.75
Bright Bagging.....	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic .....*	5.75	"	—
Jute Threads.....	4.25	"	4.75
Sisal Strings.....	3.25	"	3.75
Mixed Strings.....	1.10	"	1.20

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts....	3.12½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings..	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Mixed Books.....	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut..	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas.....	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50	"	—
New 100% Kraft Corrugated Cuttings..	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings.	.72½	"	—
White Blank News.	1.65	"	—
Overissue News.....	.85	"	—
No. 1 News.....	.75	"	—
No. 1 Mixed Paper.	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—		
New White No. 1.	.07½ @	.07½
New White No. 2.	.04½ "	.05
Light Silesias.....	.04½ "	.04¾
Silesias, No. 1....	.04 "	.04¼
Black Silesias, soft	.03¾ "	.04
New Unbleached..	.07½ "	.07½
Washable Prints...	.03¾ "	.03½
Washable No. 1..	.02 "	.02¾
Blue Overall.....	.04½ "	.05½
Cottons—According to grades—		
Washable shredding	— "	.01¾
Fancy Percales....	.03¼ "	.03½
New Black Soft....	.02¾ "	.03
New Dark Seconds	1.75 "	2.00
Khaki Cuttings—		
No. 1 O. D.....	.03 "	.03¼
No. 2 Mixed.....	.02¾ "	.02¾
Corduroy	.01¾ "	.02¼
New Canvas.....	.04¾ "	.05¼
New Black Mixed.	— "	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80 "	—
White No. 2—Repacked	2.90 "	—
Miscellaneous No. 1.	3.20 "	—
Miscellaneous No. 2.	2.65 "	—
Thirds and Blues—		
Miscellaneous	1.80 "	—
Repacked	2.20 "	—
Black Stockings—		
(Export)	Nominal	
Roofing Stock—		
Foreign No. 1.....	Nominal	
Domestic No. 1...	1.55 "	—
Domestic No. 2...	1.45 "	—
Roofing Bagging..	1.35 "	—
Old Manila Rope...	5.75 "	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled..	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
White Blank News..	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger.	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Box Board Cuttings.	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News.....	.85	"	—
No. 1 News.....	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut....	2.87½	"	—
Hard White Envelope Cuts, one cut.....	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50	"	—
Mixed Kraft Env. & Bag Cuttings.....	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Overissue News.....	.85	"	—
Box Board Cuttings.	.72½	"	—
New Corrugated Cuttings, Kraft.....	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.50	@	—
Sisal Rope.....	4.50	"	—
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope.....	5.25	"	5.50
Jute Carpet Threads.	3.25	"	3.50
Bleachery Burlap....	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	4.00
Scrap Sisal.....	4.25	"	4.50
Scrap Sisal for Shredding	4.75	"	5.00
Wool Tares—			
Foreign	(nominal		
Domestic	4.25	"	4.50
Aust. Wool Pouches.	5.75	"	6.00
New Burlap Cuttings	5.50	"	5.75
Heavy Baling Bagging	5.50	"	5.75

Paper Mill Bagging..	3.00	"	3.25
No. 2 Bagging.....	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints.	.04½ @	.04¾
Fancy Percales....	.04¾ "	.05
New White No. 1.	.08 "	.08¼
New Light Flannelettes	.06 "	.06¼
Canton Flannel, Bleached	.08¾ "	.09½
Underwear Cutters, Bleached	.08 "	.08¼
Underwear Cutters, Unbleached	6.50 "	6.75
Silesias No. 1.....	.06 "	.06¼
New Black Silesias..	.03¾ "	.04
Red Cotton Cuttings	.03½ "	.04
Soft Unbleached....	.08½ "	.08¾
Blue Cheviots.....	.04¾ "	.05
Fancy	.02¾ "	—
Washable	.01¾ "	—
Cottons According to Grades—		
Blue Overalls.....	— "	.05½
New Black, Soft..	.03¾ "	.04
Khaki Cuttings.....	.04½ "	.04¾
O. D. Khaki.....	.04½ "	.04¾
Corduroy	.02 "	.02¼
New Canvas.....	.06 "	.06½
B. V. D. Cuttings...	.07¾ "	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls...	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.55	"	—
No. 2.....	1.45	"	—
No. 3.....	1.35	"	—
No. 4.....	1.35	"	—
No. 5, Quality A..	1.35	"	—
Quality B..	1.20	"	—
Quality C..	.95	"	—
Old Manila Rope..	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger.	2.17½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
White Blank News..	1.65	"	—
Mixed Kraft Env. & Bag Cuttings..	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News.....	.85	"	—
No. 1 News.....	.75	"	—
No. 1 Mixed Paper..	.70	"	—
No. 1 Roofing Rags..	1.55	"	—
No. 2 Roofing Rags..	1.45	"	—

Pulp Index Shows Gain

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 29, 1942—The Federal Reserve Board index for January showed a gain in pulp production of 10 points over that for the previous month. The index showed other production gains in January over December of 12 points for sulphate pulp, 5 points for soda pulp, and 6 points for ground wood pulp. The January index of sulphite pulp production stood 37 points above that for January of last year.

Shipments to the domestic market in January showed gains over December for all types of pulp other than soda pulp, for which there was a slight decrease. Shipments of groundwood pulp were 47 per cent above those in January 1941.